15 pages of *your* car problems solved by *our* experts

CAR MECHANICS

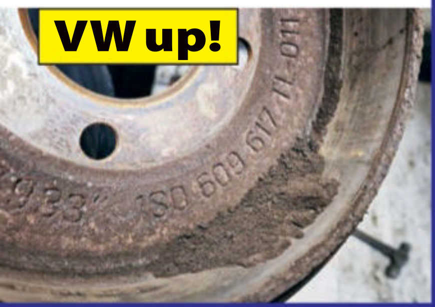
SAVING YOU MONEY SINCE 1958

REAR STRUT SWAP
Subaru Forester

WINDOW REG CLIP
Citroën Xantia

MAINTENANCE
Vauxhall Mokka X

STICKING Rear Brakes
VW up!



VEHICLE SECURITY

12 PAGE SPECIAL

- ✓ How to prevent break-ins
- ✓ Van defence options
- ✓ DIY & professionally-fitted electronic protection devices

KEEP IT SAFE!

March 2025 £4.99 03
KELSEYmedia

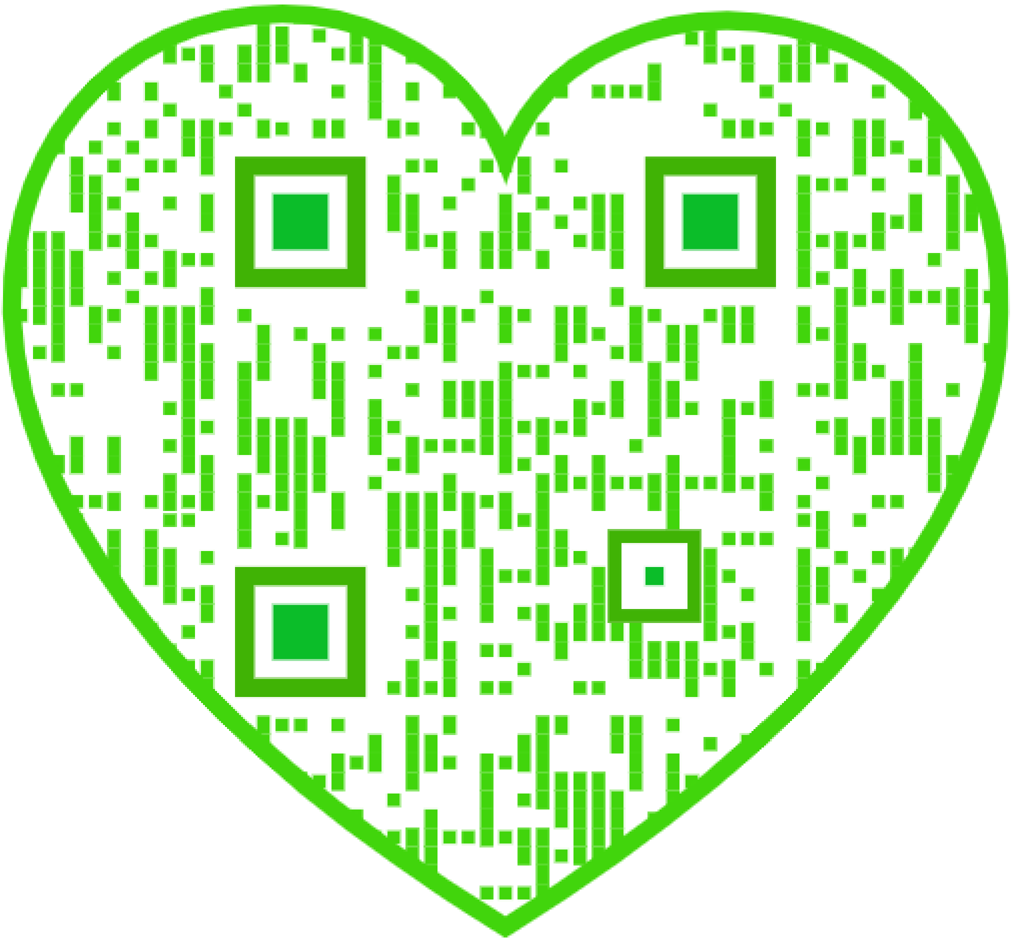
WIN
Air Equipment
compressor and tools
Clarke
1 prize worth over £340
SEE PAGE 26

Clarke
RAIDER
air

DIAGNOSTICS
Ford Fiesta
Probing a Mk5 1.25

BUYING
smart forfour
2014-on models

WORKSHOP
Vauxhall Vent Valve
Easy DIY fix on 1.6



POWER STEERING STOP LEAK
ENGINE OIL STOP LEAK
OCTANE BOOSTER
Synthetic Oil Stabilizer
PURE SYNTHETIC
DPF CLEANER
DIESEL DEEP CLEAN
UPPER CYLINDER Lubricant and Injector Cleaner
FUEL SYSTEM CLEANER
HEAVY DUTY Oil Stabilizer
SAFEGUARD ETHANOL FUEL CONDITIONER
TRANSMISSION FIX
STOPS SLIP

UNBEATABLE PROTECTION AND QUALITY

You can't give your customers any better protection for their vehicles than Lucas Oil's Problem Solving and Utility Lubricants. Lucas products are created and tested to withstand the toughest conditions, while maximising performance, efficiency, and mechanical longevity leading to customer satisfaction.

LUCAS OIL

LucasOil.co.uk | +44 (0) 1248-723-666

Editorial

Martyn Knowles, Editor
Email **martyn.knowles@kelsey.co.uk**
Follow us on Facebook @ Car Mechanics
Order back issues here: shop.kelsey.co.uk/single-issue/car-mechanics-magazine

Bad Engines

▶ I tend to run older vehicles. Some have been in my ownership for decades. I've keep the 'long-termers' for this period mainly because I consider the fitted engines to be indestructible. Tried and tested so to speak. Both my Ford Focus engines have stood the test of time – 1.8 in the Mk1 was the best buy for economy (as good as the 1.6) with durability. And the 1.6 in the Mk2 can easily do 200,000+. Both diesels I run are non-DPF engines – VAG 1.9 can go on forever and a 4.0 V8 that feels like it will outlive me.

We do hear sometimes of shocking engine failure. An obvious candidate is the 'wet belt' system used on Ford's 1.0 EcoBoost petrol and 2.0 EcoBlue diesel. Then there's the slightly different design used on the PureTech 1.2 petrol engine found in many Citroën, DS, Peugeot, Jeep and Vauxhall models.

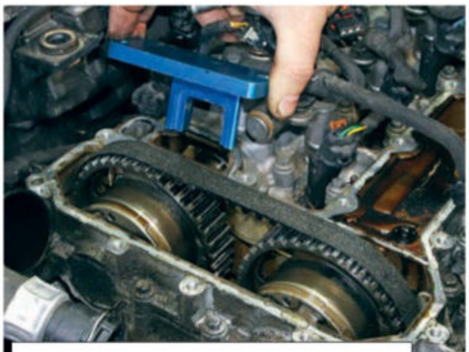
Other engines that I feel are weak, but probably OK if servicing before the recommended service interval, is the Nissan/Renault 1.2 petrol as fitted to our ex-project 2014 Qashqai. These can drink oil and eventually seize due to lack of dipstick checks. See page 79 for an overview of this engine. Then there's JLRs Ingenium 2.0 diesel that has a habit of destroying itself due to timing chain tensioner or guide failure.

Even the little Toyota Aygo that I bought cheap from BCA a few months ago, with the 1.0 Toyota engineered engine, isn't as robust as I thought. Mine needs a replacement engine due to blue-coloured smoke being emitted from the exhaust – I think the piston rings are worn. I've nearly bought three second-hand engines in as many months – dawdling has been my problem, as when I go to 'buy now', they are already sold!

Rob Hawkins and I plan to extract the Aygo engine, fit the replacement, then strip the original to find out why it failed. It should make an interesting feature.

And... to back-up my 'wet belt' disaster stories, I've bought one! Fitted to a Peugeot 2008 and acquired as a family member's new car, the 1.2 3-cylinder has covered 64,000 miles in just under nine years. At this mileage it is time to renew the timing belt anyway. As you will see in a future magazine, this 1.2 turbo 130PS PureTech was pushing bits of belt around the engine oil due to belt wear. Maybe I should have bought a Vauxhall Mokka 1.4T instead. I'm not sure which is the more durable.

Tell me via the email above, any horror engine stories you've experienced.



The BCA-bought Peugeot 2008 1.2 130PS PureTech had plenty of debris from its original belt flowing around the engine.

Focus getting old

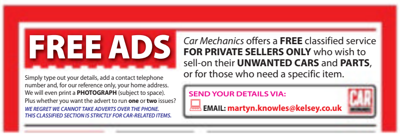
▶ In my last *Editorial*, I mentioned my Ford Focus Mk1 was 16-years-old. I got that wrong as it hits 27 this October! I bought this Focus as it's an early registered model from 1998, just after launch in September. I need to put some more effort into its appearance but mechanically it drives fine – although it has just sprung a PAS leak which, if you've experienced this before, goes everywhere as the pump is pumping OK. To work out where it was leaking from, I had to refill the reservoir first, using a 5 litre bottle of febi ATF. Luckily, I only cut a slit into the foiled sealing top, rather than pull it off completely, as this allowed the bottle to sit above the reservoir, propped up against the open bonnet, feeding in ATF as fast as it was being pumped out. I managed to refill the reservoir enough to drive to my local garage as I think it's best to put the Focus up on a ramp to find out exactly where it is leaking – while catching escaping fluid in the oil drain canister. Probably needs a new pump if I'm honest, but we will tackle this job soon to find out. Then its MOT time in March for the Mk1 – hopefully the rusty nearside sill isn't too bad. It will be for sale this year, if anyone is looking for an early Focus Zetec 1.8?

Yorkshire mechanics wanted

AES
WELCOME TO AES
YORK LIMITED

▶ We work closely with Mark Shipman at **AES** near York and Harrogate, especially on our *Electronic Diagnostics* and *Service Bay* features. Surprisingly, Mark says he is struggling to recruit apprentices and reliable mechanics/technicians because there appears to be nobody who wants to do these jobs in his area. We've come across this in other areas of the UK, where trained technicians are hard to find, but Mark has found it's impossible to find anyone wanting to work in this industry, whether it's someone who is fully qualified or with limited experience. So if you are interested in working with him and also *CM*, give Mark a call on **01904 780149**. See **autoelectricsyork.co.uk** for further information on AES.

For sale adverts



FREE ADS

Simply type out your details, add a contact telephone number and, for our reference only, your home address. We will even print a **PHOTOGRAPH** (subject to space). Plus whether you want the advert to run **one** or **two** issues?

WE REGRET WE CANNOT TAKE ADVERTS OVER THE PHONE. THIS CLASSIFIED SECTION IS STRICTLY FOR CAR-RELATED ITEMS.

Car Mechanics offers a **FREE** classified service **FOR PRIVATE SELLERS ONLY** who wish to sell-on their **UNWANTED CARS** and **PARTS**, or for those who need a specific item.

SEND YOUR DETAILS VIA:
EMAIL: martyn.knowles@kelsey.co.uk

▶ Ideally, I need *CM* readers to send me any sale items if possible, using my email address above. On page 96 you will see our *Free Ads* section. This time, 95% of the entries you see are created from adverts in other magazines in the Kelsey Media portfolio. However, I'd like to keep it real with material from our core readership. Please do send in your 'vehicles for sale', 'parts for sale' or 'wanted'. Include your address details for my reference only.

Contents

We are sorry, but apart from material sent to *Help!* or *Diagnostics Doctor*, not all correspondence can be replied to personally, though everything is read carefully. Emails will be treated in the same way as ordinary mail – the editor is not normally available to provide instant replies.

SUBSCRIBE
save money and get a FREE
SEALEY HEAD TORCH
SEE PAGE 19

FEATURES

6 Vehicle Security
The last decade has seen car theft rising and things are getting worse. Rob Marshall, therefore, looks at what you can do to encourage the would-be thief to leave your vehicle alone.

60 Overseas Parts
Cheaper replacement parts stemming from Asian markets are becoming more widespread – but is this something to fear?

90 GSF Story
With a new owner, we look back at how GSF Car Parts started out as a business.

WORKSHOP

28 Ford Focus Mk3 1.0
Part TWO: Overview of the EcoBoost components, plus steps to renewing air and cabin filters.

22 Tales from the Workshop
Real-life workshop problems, and how they were fixed.

38 Subaru Forester Rear Strut replacement

42 Citroën Saxo/Xantia Window Regulator Clip

48 Vauxhall Positive Crankcase Ventilation Valve renewal

56 VW up! Sticky Rear Brakes fix

62 Service Bay: Vauxhall Mokka X 1.4T

84 Electronic Diagnostics: Ford Fiesta Mk5 1.25

BUYING ADVICE

50 Buying, Owning: smart forfour

REGULARS

5 Peter Simpson column

20 *CM* Insider
News and Product reviews.

54 Dealer's Diary

68 Help!
Your motoring problems answered.

80 Diagnostics Doctor
Your diagnostics-related problems sorted.

90 Our Cars
Andrew Rolland helps fix his friends suspension problems on a BMW 320d F11, while Jake Belder prepares his 2004 BMW 530i for its MOT test.

96 *CM* Free Ads
Sell your car, parts here.

98 In My Humble Opinion
If only everyone did things correctly with cars – but they don't and probably never will says Mike Humble.

CONTACT US

CAR MECHANICS
KELSEYmedia
www.kelsey.co.uk

**Car Mechanics, Kelsey Media, The Granary,
Downs Court, Yalding Hill, Yalding, Kent ME18 6AL.**
Email: cm.ed@kelsey.co.uk

Car Mechanics is published 12 times a year, on the 3rd Friday of each month, by **Kelsey Publishing Ltd**.

EDITORIAL
Editor **Martyn Knowles**
email martyn.knowles@kelsey.co.uk
Technical Editor **Steve Rothwell**
email carmechanicshelp@yahoo.co.uk

CONTRIBUTORS
Alan Anderson, Jake Belder, Peter Clayton
Ian Cushway, Andrew Everett, Rob Hawkins
Mike Humble, Rob Marshall, Andrew Rolland
Peter Rosenthal, Peter Simpson, James Stanbury

ADVERTISING SALES & PRODUCTION
Talk Media Sales
Account Manager **Natalie Excell**
Tel: **01732 445674**
email natalie@talk-media.uk
Ad Production **Nick Bond**
email nick@talk-media.uk
Tel: **01959 541444**

SUBSCRIPTIONS
12 issues of CAR MECHANICS are published per annum
UK subscription and back issue orderline
0845 241 5159
Overseas subscription orderline
0044 (0) 1959 543747
Toll free USA subscription orderline
1-888-777-0275
UK customer service team: **01959 543747**
For customer service support, please visit
https://help.kelsey.co.uk
Customer service and subscription postal address
**Car Mechanics Customer Service Team,
Kelsey Media, The Granary, Downs Court,
Yalding Hill, Yalding, Kent ME18 6AL**

Already a subscriber?
Manage your subscription online:
shop.kelsey.co.uk/site/loginForm

MANAGEMENT
Managing Director **Phil Weeden**
Subscription Marketing Director **Gill Lambert**
Retail Director **Steve Brown**
Print Production Manager **Georgina Harris**
Print Production Controllers **Kelly Orriss** and **Hayley Brown**
Subs Marketing Exec **Dave Sage** and **Claire Aspinall**
Affiliate Marketing **Kate Chamberlain**

DISTRIBUTION
Distribution in Great Britain
**Seymour Distribution Limited,
2 East Poultry Avenue, London EC1A 9PT**
Tel: 020 7429 4000
www.seymour.co.uk
Distribution in Northern Ireland
and the Republic Of Ireland
Newspread, Tel: +353 23 886 3850

Kelsey Media 2024 © all rights reserved. Kelsey Media is a trading name of Kelsey Publishing Ltd. Reproduction in whole or in part is forbidden except with permission in writing from the publishers. Note to contributors: articles submitted for consideration by the editor must be the original work of the author and not previously published. Where photographs are included, which are not the property of the contributor, permission to reproduce them must have been obtained from the owner of the copyright. The editor cannot guarantee a personal response to all letters and emails received. The views expressed in the magazine are not necessarily those of the Editor or the Publisher. Kelsey Publishing Ltd accepts no liability for products and services offered by third parties.

Kelsey Media takes your personal data very seriously. For more information of our privacy policy, please visit www.kelsey.co.uk/privacy-policy.
If at any point you have any queries regarding Kelsey's data policy you can email our Data Protection Officer at dpo@kelsey.co.uk

The Peter Simpson COLUMN

Recent press reports have prompted Peter to think a bit about MOT testing in general, and the 40-year classic exemption in particular.

▶ This past month, I've found myself thinking about MOTs a bit, even though it isn't yet 'peak MOT' time in the Simpson household. That's early April when our Kia Sorento, Volvo C70 and Volvo 240 tests all fall due within a fortnight. However, it's now a year since I collected my daughter Katie's VW up! from BCA Blackbushe, and since it came with a test that ran out on the day of collection, it was due again. I had, of course, checked it beforehand, topped up the washer bottle and popped on a pair of new wiper blades. As expected, it subsequently went straight through, and the only advisories were for a bit of light cracking of the front tyres.

The other MOT 'thing' I've been thinking about is rumours online and in a few newspapers that the exemption from testing for cars over 40-years-old might be removed. I've not seen any real evidence that this is under consideration; certain sections of the press have been shouting about how two out of five (41%) of respondents to a Department for Transport consultation supported cars over 40-years-old needing either a full MOT or a dedicated classic roadworthiness test.

Now I know my schooldays in the 1970s are now half a century ago, but I'm sure the basic principles of mathematics haven't changed to the extent that 41%, or four out of ten, constitutes a majority…

Looking at this in more detail, the aspect that wasn't so widely publicised was that only 5% fewer people than wanted change (36%) thought no change was needed. Then factor in the 23% who because they didn't respond – presumably they aren't bothered either way. It seems pretty clear that, contrary to the banner headlines claiming otherwise, there isn't actually any great appetite for change among owners. Especially if you also consider that people who want change are much more likely to reply to something like this than people who don't.

Oh, and don't forget that the sample was just 1000 respondents. In other words, roughly 410 said they wanted some kind of roadworthiness test, about 360 (only 50 fewer) wanted the current exemption to remain, and 230 weren't bothered either way.

Controversial support

I know this is controversial, but I support the principle of over 40-year-old cars being test-exempt. I don't, however, take that view because of the benefit it gives classic owners, though as the owner of four MOT-exempt cars I won't deny that it's extremely useful.

No, my main reasons for supporting exemption come down to just how different old-timer cars are from those still in daily use. Cars from the classic era are positively archaic by comparison even to today's 10 to 15-year-old 'bangers' – that's a big part of their appeal to enthusiasts.

But because the overall test procedure that cars like the Simpson family VW up! go through must also be applicable to 40plus-year-old cars, it kind of restricts how stringent the test can be. Take suspension wear for example. Excessive/dangerous movement on a car made in 2012 would quite probably be totally normal on one made in the 1970s. Then there's the advances in things like braking performance, lighting efficiency and so on. To be fit for purpose, a roadworthiness test must be tough enough to ensure modern vehicles are safe. But if the test also has to encompass cars from 30 years earlier, then making it relevant becomes ever more difficult.

"But different standards already apply to different ages of car", I hear the critics say. Yes they do, but as times go on, so the number of different age and model standards become greater, until eventually it's just too confusing.

Then there's the test procedures. The best way of checking for wear in front suspension is by using powered shaker plates which shake the suspension and measure play, shock absorber performance and so on automatically. But using a system like that on a car with significant design movement is likely to cause damage.

The other key issue is whether a tester whose main responsibility is ensuring modern cars are safe actually has the necessary knowledge and experience to apply the same judgements to classics. This is likely to become even more of an issue in the next ten years or so as a significant number of older testers reach retirement age.

A typical new tester who qualifies today will be in his or her mid-late 20s. This means they'll most likely have completed their apprenticeship in around 2010-2015. Unless such a person has a particular interest in classics, it's unlikely they'll have any direct hands-on experience of them. It's also highly improbable that they'll have the knowledge or understanding to make roadworthiness judgements. Bear in mind too classics represent a tiny percentage of cars on the road; according to recent figures that are 340,000 cars over 40-years-old with a current registered keeper, but around 12% (40,000) of those are off the road with SORN declarations. There are currently 34million cars on Britain's roads. Let's assume a quarter of those are under three-years-old and don't need testing, and we have 25.5million testable cars. If testing of cars over 40-years-old was to be reintroduced, they'd still represent just 1.5% of the testable car parc. It's totally unrealistic to expect a young 30something tester to acquire a full understanding of classic car roadworthiness in order to test a type of car they may see a dozen times a year!

Of course, classic car owners do have a responsibility to ensure their cars always remain roadworthy, and for some, a voluntary MOT test carried out by a tester who understands classics is the best way of ensuring that. But given how different classics are, a roadworthiness inspection by a make or model specialist is probably a better option than a MOT from a garaged selected at random. And I'm convinced absolutely that taking classics out of the compulsory testing regime is the best way of ensuring that the test continues to be relevant to the 98.7% of cars that are not over 40-years-old.

Keep it safe

The last decade has seen car theft rising and things are getting worse. **Rob Marshall**, therefore, looks at what you can do to encourage the would-be thief to leave your vehicle alone.

Things were much easier in the old days. While cars were simpler to service and repair, they were also relatively effortless to steal. In the early 1990's, all a miscreant had to do, to earn an evening's joyriding thrill, was invest in the same physical tools and techniques as those used by burglars. The problem was that, as carmakers made more exciting and faster cars increasingly accessible to the mass market, they failed to upgrade their security. This provided the opportunist with the luxury of choice. Instead of Metros, Itals and Cortinas, they could select racier XR3is, 205 GTis, Nova GSis and even Escort/Sierra Cosworths. Insurers took note, raising premiums and making certain cars uninsurable in stock form, forcing the owner to invest in supplementary anti-theft upgrades. The resulting situation made motorists more security conscious and aftermarket steering/gear lever locks became common, alongside alarms, immobilisers and position tracking systems. Vehicle manufacturers took a little longer to keep up but, slowly, factory-fitted standard protective equipment crept into the new car scene.

Vehicle crime is on the rise and vehicle thieves are becoming more sophisticated. Even physical attempts to steal a vehicle are becoming outmoded.

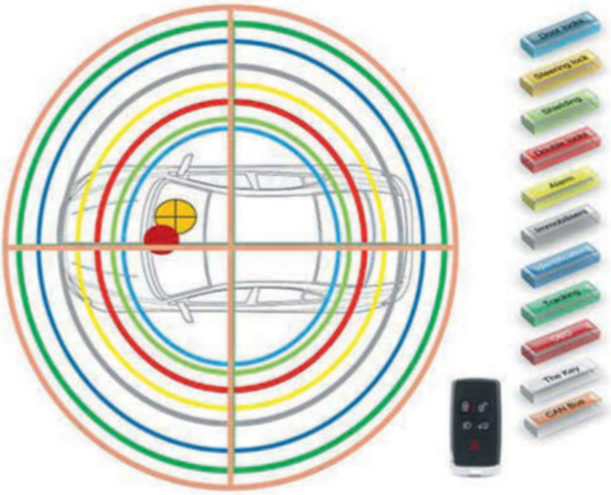
Many vehicles are stolen for export, mainly to Asia and Africa. While those countries are working to combat the problem, borders pose a problem. The same is true with UK police, when facing county border lines.

Recent spare parts and semi-conductor shortages have resulted in parts being stolen from vehicles, where they stand, often to order. Rising scrap prices also see exhaust systems being cut off, even on private driveways, while the owner sleeps.

How car security works

▶ Since the 1990s, modern automotive security systems have been designed around a host of systems that not only prevent the car from being stolen but also make it harder to clone. When put together, these systems form layers – the thief must overcome each layer before moving to the next one. Therefore, theft is reduced, dependent on the number of layers and how effective they are.

In the early days, when standard-fit security systems were little more than basic door and steering wheel locks, the aftermarket provided electronic means of protection, including alarms and immobilisers, plus visual deterrents, such as vehicle identification etching. Most moves have been adopted since by vehicle manufacturers, although their effectiveness has been undermined by legislation and criminal ingenuity. This is why you should consider extra security enhancements to encourage a thief to move on from your vehicle to an easier target.



The UK government took action, too. After recognising the major increases in vehicle crime in 1990s, police forces introduced stolen vehicle squads, the specialist officers within which identified theft methods and compiled evidence against the criminals to be used in court. Furthermore, the automotive industry started working directly with police not just to design superior security systems but also to reduce vehicle losses and increase arrests.

The effect was staggering. Vehicle crime decreased from early 1990's levels of 625,000 to 75,000 by 2016. Yet, this figure is rising again, having climbed to just under 90,000 by mid-2022.

Playing leap-frog

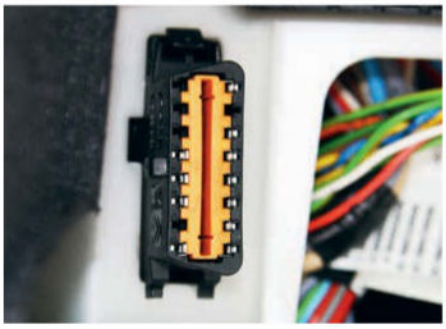
According to Vehicle Security Solutions Today Ltd (VSST), an organisation that focuses on finding security answers and upholding high industry standards, the dramatic drop was a victim of its own success. Funding for Stolen Vehicle Squads declined to the extent that these specialist officers have disbanded, leaving ill-equipped and inexpert traffic officers to take on the burden. Budget cuts, overstretched resources and challenges with police recruitment have resulted in the not altogether unreasonable public image of a car theft report being met with relative inaction, aside from a crime reference number. Things are not helped by car crime being considered low-level, although, should a thief break into a home to retrieve the keys, this makes the crime more serious. Yet, car owners have become complacent, too. Thinking that factory-installed security is impenetrable, many people do not consider supplementary security equipment as relevant. Nothing could be further from the truth.

The most worrying problem is the nature of today's automotive thief. As a considerable percentage of the vehicle crime reduction was from outwitting opportunists, the more dangerous criminal fraternity was left, which is far more cunning and determined than the 1990's joyrider. The VSST reports that organised criminal gangs use stolen vehicle profits to fund other crimes, including drugs, terrorism and people trafficking. Unfortunately, these gangs are growing, as explained by the crime figures adopting an upward trend.

Ironically, new technologies that car manufacturers have introduced from the early 2000s have also weakened security. While keyless entry fobs might be the most obvious example, the VSST highlights that even Euro Emissions legislation compliance and digital CAN-bus wiring have weakened security, rather than bolstering it.

Naturally, this was not intentional. As car thieves have become more sophisticated, they developed means of not only overcoming new security systems but also taking advantage of new technology to enter and drive away the vehicle without even scratching the paintwork. A typical example of this is gaining access to the CAN-bus wiring from behind a body panel, to extract the key code and overcome the alarm/immobiliser. Perhaps a better-known example is relay hacking, where the signal, emitted from a keyless fob, is captured and replicated.

When a new car is launched, its security system will also be relatively new, although, naturally, its sophistication and effectiveness tend to be relative to the retail price. As time passes, again, dependent on the desirability of that model, professional car thieves will find weaknesses. Once the aftermarket industry discovers the vulnerability, they develop fixes. Car manufacturers then learn and apply these modifications, usually when a car model is facelifted, or replaced. Then, the cycle repeats.



While there are kits that enable you to relocate the diagnostic socket, there is little point if the thief can breach the CAN-bus wiring from outside the car.

disklok
disklok

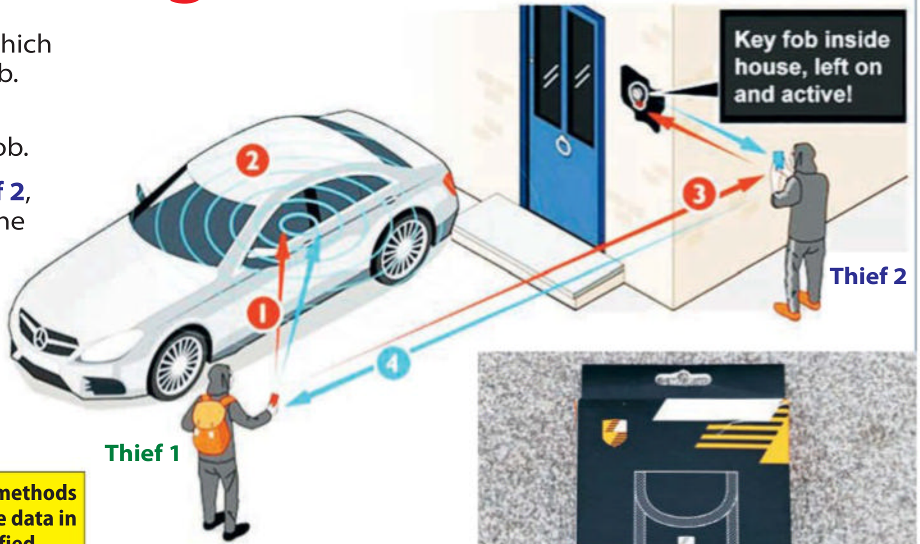
Good-quality security equipment must be third-party verified. Sold Secure is funded by insurance companies and its testing protocols are one of the hardest for manufacturers to pass.

ROB'S TOP TIP

Inform your insurance company of any aftermarket security fittings.

How Relay Hacking works

1. **Thief 1** pings the car entry system which is constantly 'listening' for the key-fob.
2. Car responds by requesting an authentication signal from the key fob.
3. **Thief 1** forwards the request to **thief 2**, who is near the real key fob (inside the house) which is always on, listening for the car.
4. The key fob then responds with a valid authentication, which **thief 2** then forwards back to **thief 1**, who accesses the car.


Key fob inside house, left on and active!
2
3
Thief 2
1
4
Thief 1

Keyless theft is one of the most common modern methods that thieves use to steal vehicles. Interestingly, the data in cloned keys is laid out differently, so can be identified.

DIY electronic protection

▶ By its very nature, good quality, independently-endorsed electronic security equipment is very difficult to procure. Also, for obvious reasons, installation instructions are not in the public domain. Even so, you are not on your own. Live-action 'dashcam' cameras are worthwhile security additions but check that their features match your needs. Some of them can send notifications to your mobile 'phone, should they detect movement. This is in addition to the usual protection they give, should you need evidence, in the event of a collision. Even better, a moderately skilled DIY should be able to hard-wire one in place, as the following steps demonstrate.

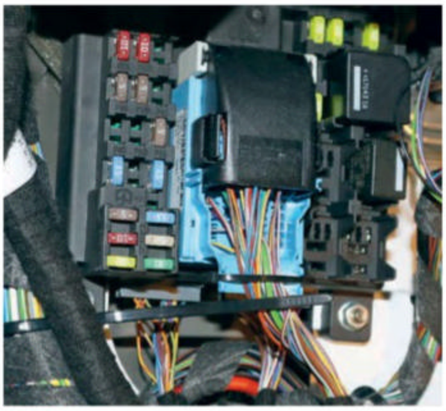
ROAD ANGEL
HALO PRO
ROAD ANGEL
ACCESSORY

A1 ◀ **Should you be working on a high-voltage hybrid car, isolate the high-voltage system and wait several minutes – see our March 2024 issue for more information. Choose your dashcam. You can buy front and rear-facing units with a variety of features. Here, we shall focus on a front-facing unit only.**

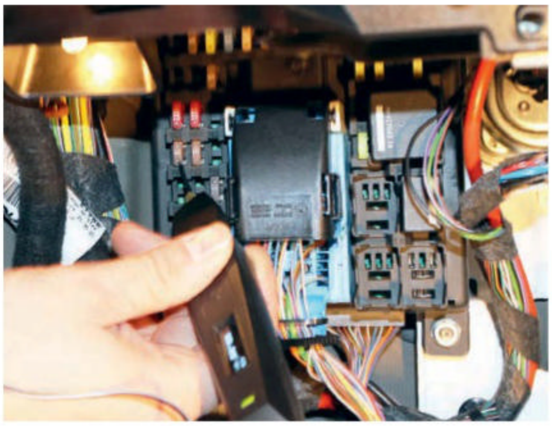
A2 ▶ **Locate the fusebox and remove any surrounding trim that may be required, to facilitate decent access. In this case, the door pillar rubber seal had to be prised from its lip.**

TVL Anti-Scan Wallet
TVL Security
TVL Security

Faraday pouches block keyless fob signals. TASSA reports that, during testing, many do not work, because the material was not robust enough to stand up to constant use. It also wears quickly and so expect to renew them every three years. Consider buying a pair, so your spare fob is protected.

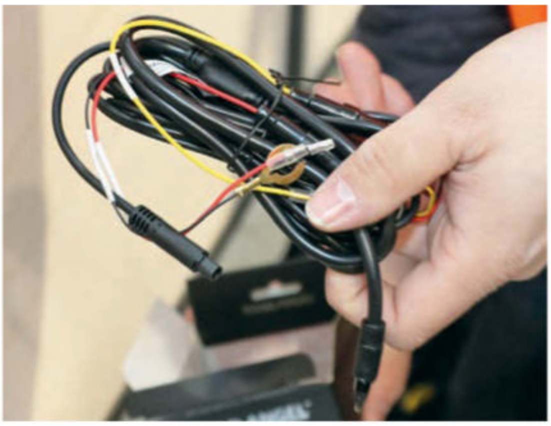


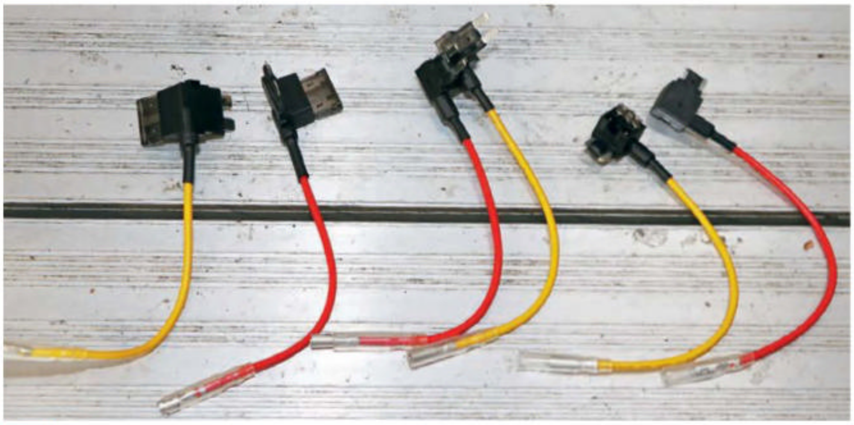
A3 **You will need to identify feeds from the fusebox that are not just controlled by the ignition but also those that remain live, even with the ignition switched off and after the CAN-bus-connected equipment has powered down. Your handbook might provide this information. Otherwise, you will have to find this information from either your main dealer, or an automotive data source.**



A4 ◀ Even on the most recent models, you can use a conventional multimeter to check whether power is present at your chosen fuse, or not. Do not forget to check that the power supply remains intact, ten minutes after the car has been locked.

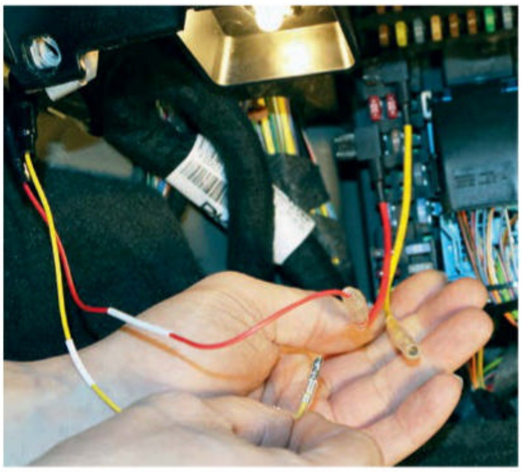
A5 ▶ As this unit must be hard-wired and does not plug into the cigarette lighter's power socket, ensure that you purchase the fitting kit, too. This will include the wiring, fuses and instructions.





A6 As this quality aftermarket kit is designed to fit a wide range of cars, it includes a variety of fuse adapters, so incorporating the dashcam electronics should be a plug-and-play exercise, with no cutting, or soldering required

A7 Check the unit's power requirements. While many dashcams require a nominal 12-volts, some of them might possess a step-down transformer, to convert a 12-volts input to a 5-volts output. This unit requires 12-volts and possesses an internal voltage regulator.



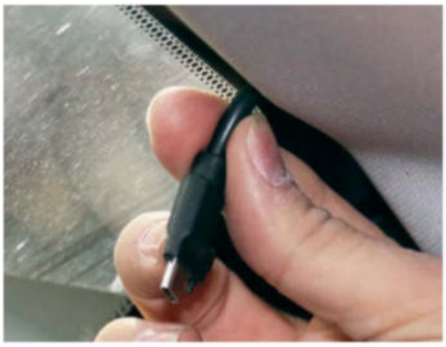
A8 ◀ Consult the unit's wiring requirements. On this dashcam, red is required for the ignition feed, yellow is the constant live and black is the neutral/ground. Note the neatness of this installation.

A9 ▶ Routing the wiring dictates that interior trim is removed. You will need to discover how these plastic mouldings can be dismounted, without breaking either the trim, or fixing clips. A set of trim removal tools is a useful purchase. Professional installers have access to manufacturer information, which details how these components are designed to be removed and refitted.

RANGE ROVER

A10 Some kits require a connection to the car body, to act as a ground. Here, the side fascia mount is used as a suitable point. Before routing the wiring, you may choose to connect and switch on the dashcam, to verify that it works, noting the points made in Step A12 and A13.

A11 When running dashcam wires up the side post and roof rails, route and secure it carefully with cable ties, taking extra care to ensure that the new cabling does not and cannot interfere with the airbag, should it deploy.



A12 In this case, the wiring could be tucked discretely behind the roof lining, without having to undertake any further dismantling. Ensure you have sufficient wiring length to reach the unit.

⇨

ROB'S TOP TIP

Thatcham Research assesses electronic security; Safe Secure looks at physical systems.

A13 Many dashcams do not come with an SD card, so procure one and install it into the unit, before powering it up for the first time.

A14 Establish the location in which you wish to fit the dashcam. It should not be in a position that distracts the driver, or impedes vision. Next, clean the area with a towel, followed by window cleaning solvent, to remove any oily residue from the glazing, prior to letting the area try thoroughly.

A15 Follow any installation instructions. The dashcam is supplied with an anti-static pad, which is placed on the windscreen, after it has dried. You can remove any air bubbles, using a plastic card (such as a bank debit/credit card),

A16 The protective film is peeled from the back of the dashcam, before the sticky backing is placed on the anti-static pad. If you have not done so already, power-up the camera to check that it works properly.

A17 Refit all of the removed interior trim, carefully. If you have broken any clips, generic replacements are available. Main dealer parts counters can help, although you may have to brace yourself for the cost. Should any trim suffer from squeaks and rattles, you might consider using butyl sealing tape.

A18 Some kits include another camera to fit into the rear window, which is the same process, albeit with more trim dismantling. For hatchbacks/estates/SUVs, the wiring should pass through the tailgate's corrugated wiring sheath.

Professional electronic protection

▶ The next layer of modern electronic protection takes us into the professional realm. While you may find aftermarket alarm/immobiliser kits to install from home, and they might serve a purpose with a comparatively low-value car, we wanted to show you the very latest in electronic car protection. 'Ghost', offered by Autowatch UK, is being lauded as the latest and most effective CAN-bus immobiliser. It protects the vehicle from key cloning, hacking and even theft. Instead of requiring a separate keypad, or fob, it utilises the existing buttons on your vehicle (such as those on the door panel, steering wheel, or fascia), from which you can input your chosen disarm sequence. An emergency disarm sequence also features and the accompanying mobile 'phone app can connect one car to two phones. Crucially, the hardware is so small that it can be hidden virtually everywhere within the vehicle, making it almost impossible to trace. As it does not emit radio frequency signals, unlike a tracker, it cannot be detected with digital equipment, either.

Vehicle Security Solutions Today Ltd, VSST (formed to uphold standards in the security arena), and TASSA (a group of companies, formed by VSST, after being asked by the Home Office to establish a programme for high-quality aftermarket tracking and security systems) reports that 'Ghost' is making a real difference, because criminals can neither find it physically, nor disarm it electronically. Thus far, both organisations have received no reports of a single Ghost immobiliser being overridden.

So, where can you buy and install a Ghost from home? Well, you cannot do either. One of the secrets to Ghost's success is that installers must be TASSA verified, trained and CRB checked. Each vehicle is registered with Autowatch UK, including the VIN, registration number, the installer and details about how that particular Ghost unit has been installed, in case a future owner wishes to remove it. This information is passed to Retainagroup's secure International Security Registry (ISR). Once registered, vehicles are not removed, unless recovered after theft. Not only can vehicles be registered by TASSA companies, when fitted with security enhancements, some vehicle manufacturers and even owners can also do so as well.

Fortunately, there are 685 installation companies throughout Great Britain and Northern Ireland, details of which can be found here: www.tassa.pro/find-tassa-installers

Due to the understandable sensitive nature of car security, we cannot detail a Ghost installation but, for the first time in a car magazine, we can show a mock-up installation for illustrative purposes, albeit we must stress that it is not reflective of where the Ghost might be installed, and emphasise why you should engage a security expert to conduct the work.

Continued on page 12

CAR BUILDER
SOLUTIONS

KIT & CLASSIC CAR PARTS SPECIALIST

ISSUE 37
OUT NOW!

ORDER YOUR COPY FROM
OUR WEBSITE

www.carbuilder.com

Contains
Wiring Diagrams
Hints & Tips
Installation Guides
Specification Charts
IVA Approved Products

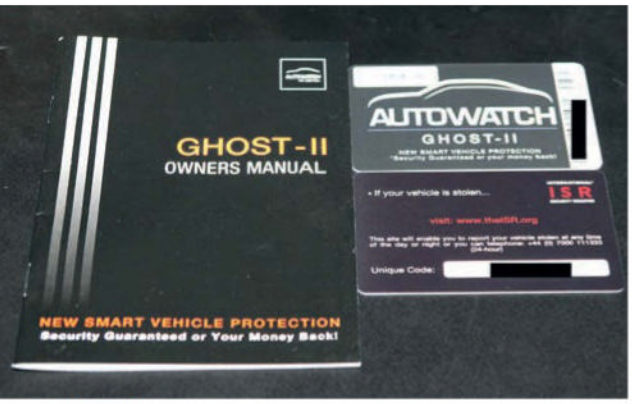
7500+ PRODUCTS AVAILABLE FOR NEXT DAY DELIVERY

Contact Information:
01580 891309
info@carbuilder.com
Redlands, TN12 0JJ, UK

Google
★★★★★
98% Positive Feedback from our great customers

ROB'S TOP TIP

Research how your car's security system works.

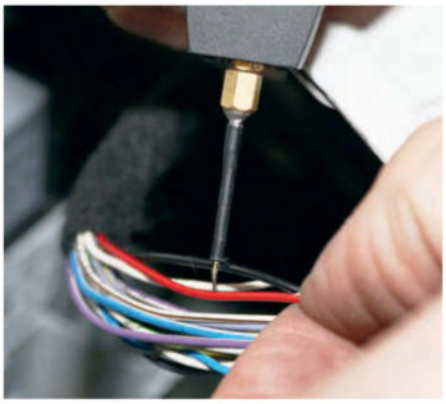

GHOST-II
OWNERS MANUAL
NEW SMART VEHICLE PROTECTION
Security Guaranteed or Your Money Back!
AUTOWATCH
GHOST-II
• If your vehicle is stolen...
ISR
visit: www.theisr.org
Unique Code: [redacted]

B1 Ghost immobilisers are immensely flexible. They can prevent starting, stall the engine when a gear is selected, or block a gear selection. The trained security expert will guide the owner on the best product, depending on the requirements and the vehicle. Generally, everyday cars, made before 2010, lack sufficiently sophisticated electrical systems for Ghosts to function fully.

B2 ◀ The Ghost unit taps into the car's wiring and CAN-bus communication network. The control unit is so compact that it can be hidden anywhere. To keep the Ghost unit's ID hidden, we have pixelated the image.

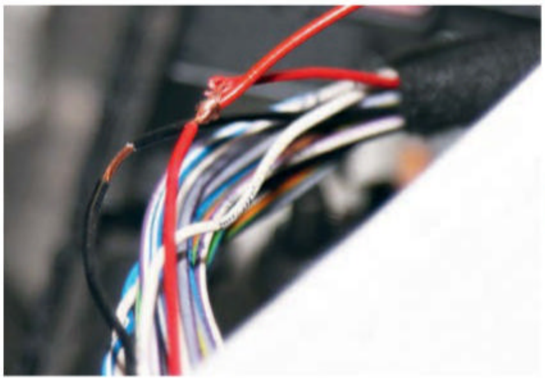
B3 ▶ The first step the installer does is to disconnect the high-voltage system (where necessary) and the 12-volt battery.

B4 After consulting vehicle-specific data, the installer will then identify the appropriate location to install the device, where the installer will have access to the correct wires for the system to work.



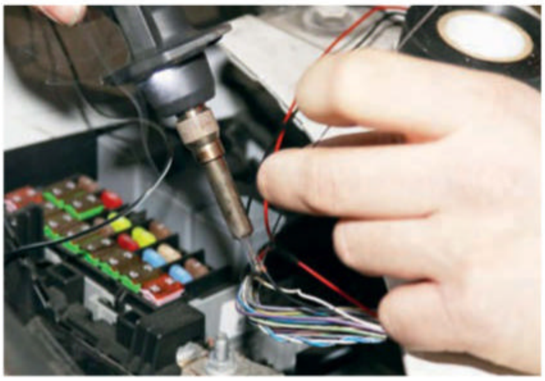
B5 Accurate data is essential and professional security installers have access to this vital information. Naturally, this installer must identify each wire accurately and, if necessary, test it.

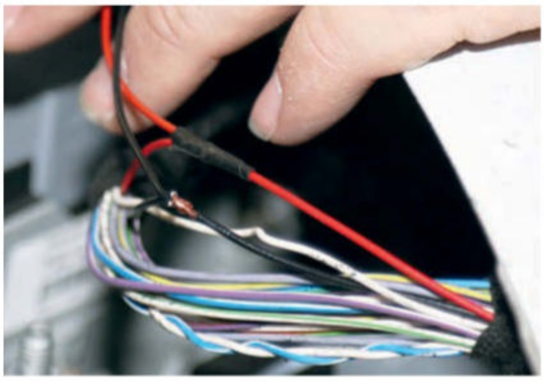
B6 When ready, the insulation from each wire must be stripped carefully, providing a point for the Ghost to tap into.



B7 ◀ The exposed copper wire on the original loom can be connected to the appropriate wire on the Ghost unit.

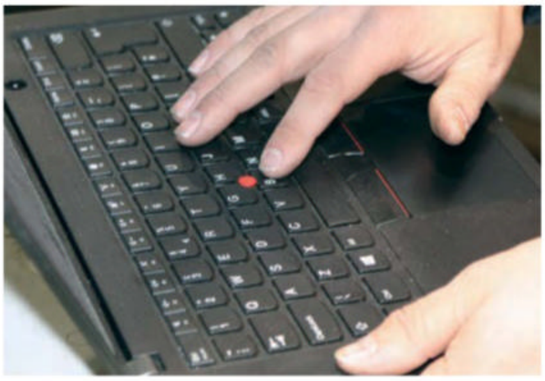
B8 ▶ The installer must consider that preferred methods of connecting wires differ between car manufacturers. Some of them do not even approve of soldering, which is why access to the appropriate data is so important.





B9 ◀ The bare connection can then be insulated with electrical tape as a first step to keep moisture from corroding the copper wire.

B10 ▶ With the battery reconnected, the Ghost unit is energised. The unit must be programmed and its firmware updated, according to make and model. Once the system is updated, the Ghost is tested for correct operation.



Beware of weeding

Should your vehicle be stolen, watch out for 'weeding', the Police's description for short-term vehicle theft. Once a stolen vehicle is reported, a marker is placed against its Vehicle Registration Mark (VRM), which must be confirmed manually by the constabulary within six weeks. Should there be no confirmation, the listing will be removed (or 'weeded') automatically. This means that any future checks will return a 'Not Stolen' status.

Philip Swift, of Motor insurance loss adjuster, Claims Management & Adjusting (CMA), says that: "This archaic process has always caused problems but we are seeing a dramatic increase in six-week weeding errors. We have raised it with the National Police Chiefs Council and multiple constabularies. Vehicles, not recorded as stolen on the Police national computer, are far less likely to be recovered. They will not get picked up by Automatic Number Plate Recognition (ANPR) cameras, or spot checks. Even if reported as suspicious, a check will show 'clear', obviously benefitting criminals."

Another issue is the six-year weeding process, after which time, VRMs that have been confirmed as stolen are removed from the Police National Computer automatically. Vehicle Crime Consultant, Ken German, admits that this is not only a "weird process" but is also a victim of circumstance. Why so many cars are weeded tends to be because the officer has moved on, or there has been no activity on the crime report.

German advises, "Even if the vehicle is found... remember that, once your insurance company pays out, they are the new owners and are not obliged to inform you."

B11 With the programming complete, the installer will hide the Ghost to ensure that, even if the vehicle were to be stripped, the Ghost would not be found. The immense flexibility of the Ghost system gives the installer almost limitless choices about where it can be placed. These details are recorded securely with Autowatch UK and the car is registered with the International Security Register (ISR), so only authorised professionals can access the information.

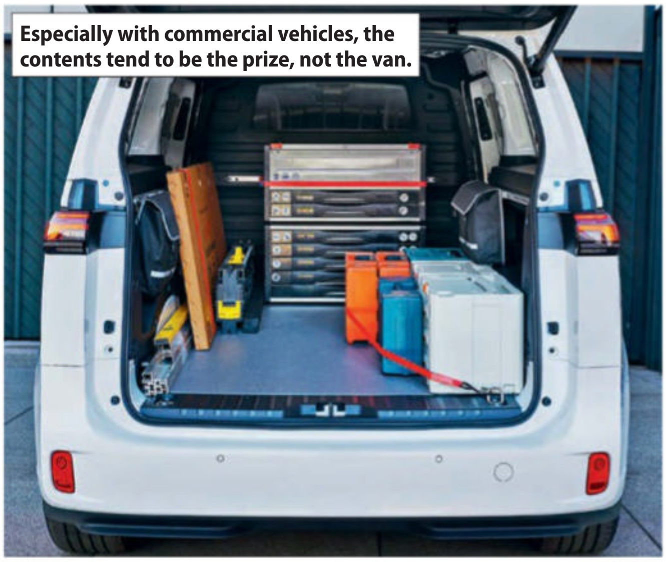
B12 Soon after the installer registers the Ghost, the customer receives a digital certificate of installation, as proof of a TASSA verified device being installed by a TASSA verified installer. This evidence, when provided to an insurer, may lower insurance premiums. The installer will also explain how the system operates before the car leaves.

Preventing break-ins

Alan Anderson reports

Like cars, commercial vehicle crime is getting worse. A van is broken into every twelve minutes and comparethemarket.com predicts that thefts may rise 60% by 2030. Thanks to the insatiable demand for stolen goods, van contents have become the prime target. Such is the audacity of today's thieves that even supermarket car parks have become prime hunting grounds, says security experts and TASSA member, ProtectAVan (www.protectavan.co.uk), part of the Essex-based TVL Group.

The bad news keeps coming: out of all van users, tradespeople suffer the worst with hand tools accounting for more than 66% of pilfering cases, followed by general equipment (56%), personal items (42%) and electronic devices (25%). Builders are affected the most by tool theft, being almost five times more vulnerable than electricians. The UK Government reveals also that almost a third of carpenters have their tools stolen more than four times over their career. Worse still, according to the *Electrical Times* magazine, only 1% of stolen equipment is recovered.



Especially with commercial vehicles, the contents tend to be the prize, not the van.

ProtectAVan believes that 60% of LCV users fit additional security devices, such as extra locks, only after becoming yet another theft statistic. Yet, despite the rise in theft, fewer than 20% of operators take out contents insurance.

Like carmakers, van manufacturers are doing their bit to deter break-ins. Yet, this tends to result in extra damage to the vehicle. Ford offers four security option packs, because it recognises that not everyone's security needs are the same. For instance, the £325 Delivery Assist pack is aimed at short-stop drop-offs and activates the hazard lights and closes the windows automatically before the van is locked. When the driver returns, the settings revert.

ROB'S TOP TIP

Know how to active standard-fit deadlocks.

Getting physical

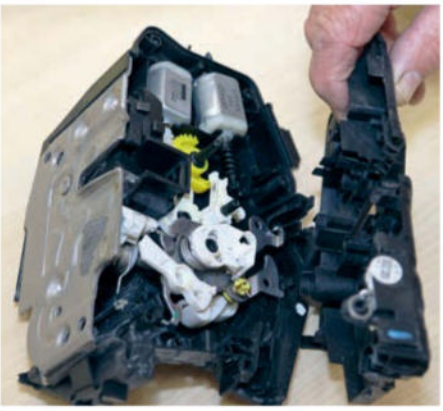
Ford and TVL Security are working together to enhance security not just for new vans but also for existing fleets. The following physical measures are available to the aftermarket, including via Ford's Accessory programme, Ford Pro. Best still, they are all designed and manufactured at TVL's HQ in Essex.

C1 Removable security features provide a visual deterrent, to encourage thieves to move on. Steering/gear/pedal locks are the most obvious examples. Seek out products that are Safe Secure approved; the police will not endorse products that are not so.

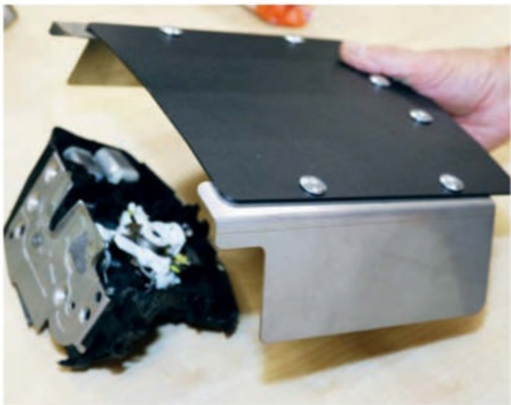
C2 External lock barrels are an obvious weakness. Pictured is TVL's RepLock, which is a replacement stainless-steel cylinder that resists picking and brute force. Best still, it can be installed, without needing to modify the original locks, or their mechanisms. RepLock is also a factory-fitted option for Ford's Transit and Transit Custom.

C3 Handles are also vulnerable to thieves using force to rip them from the door skins. TVL's SlamHandle solution is made from stainless steel and possesses a reinforced backing plate, making the thief's task considerably more difficult, if not impossible.

C4 Latches are also vulnerable. Thieves can access them physically, by piercing the door skin. This hardened stainless-steel protective plate is an obvious deterrent.



C5 Should they access the lock, thieves manipulate the mechanism to open the door. They either remove the lock backing, or drill into its moulding.



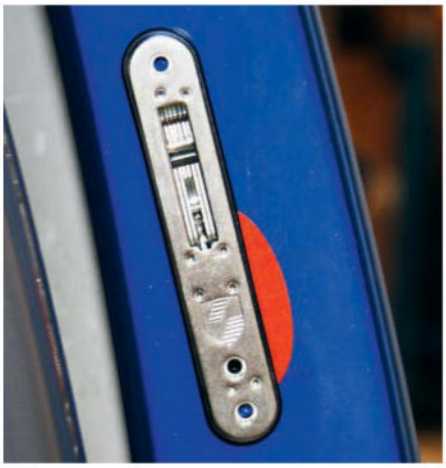
C6 A solution is to encase the lock with a hardened steel cover. Understandably, these have to be manufacturer and model-specific – and buy the latest versions.

C7 LoomGuards protect the wiring loom at vulnerable points, preventing the cables from being accessed to disarm the central locking, or attempting to break into the CAN-bus communication.

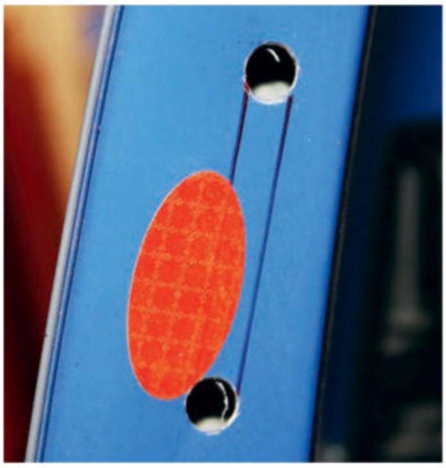
C8 Perhaps the ultimate alternative is to fit completely new locks. The chunky ArmourShell system bolts to the van doors and comes in two sizes. Its shape deflects hammer blows, its lock cannot be drilled, and the two sections resist efforts to prise them apart.

C9 A more discrete alternative is a separate deadlock. A hook-shaped bolt offers extra protection over the pictured rectangular-shaped alternative. Details on how the hook-type deadlock is integrated into the car are covered in Steps D1-D33.

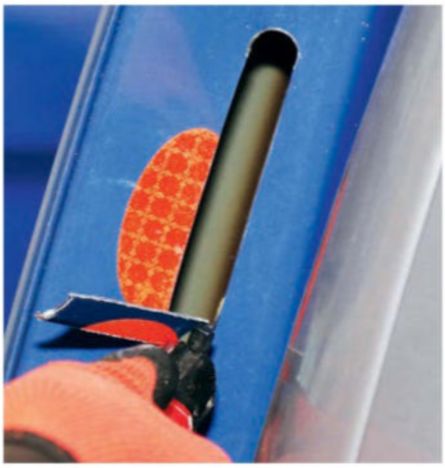
Hook bolt-type deadlock – installation



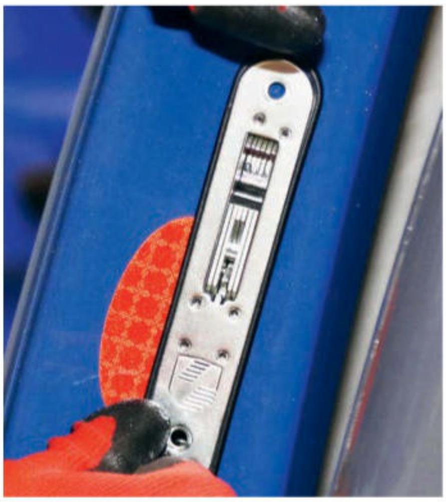
D1 As extra physical protection is worthwhile, especially for commercial vehicles, the following procedure shows how Hook-type deadlocks (or step-locks) can be installed into a side loading door.



D2 Measure and mark many times but drill once. The latch aperture is formed, by transferring the latch dimensions to the door frame and drilling a pair of holes at the extremities.

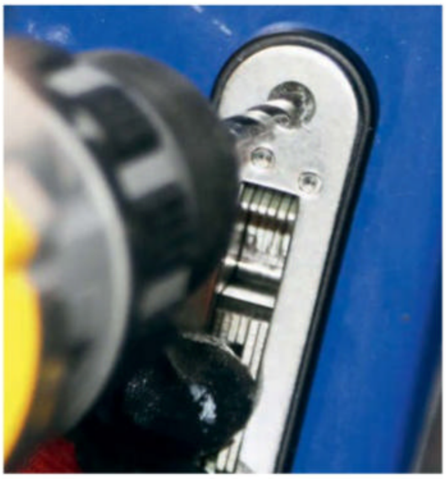


D3 Obviously, checks need to be made, to ensure that no trim, wiring, or fixings within the panel are damaged by the installation. A saw can be inserted to cut out the oval.

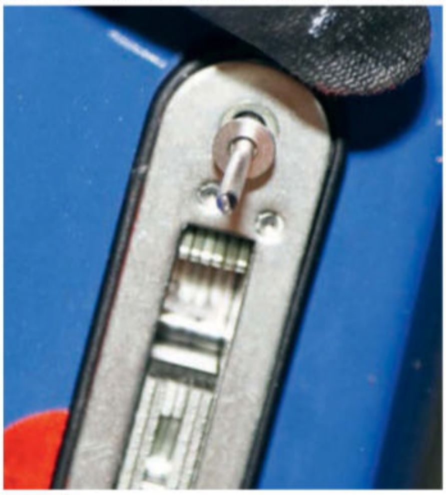


D4 Trail-fitting the latch repeatedly is prudent. Any excess steel can be ground, or filed away, but it is important not to remove material that is needed to fix the plate onto the door.

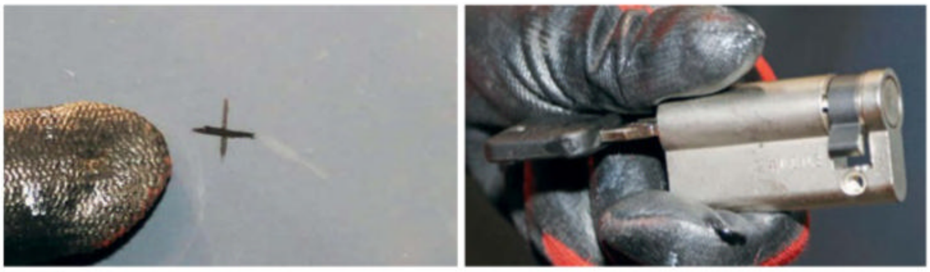
D5 Applying a rust-resistant primer/paint to the exposed bare steel is an example of the attention to detail that you should expect from a professional installer.



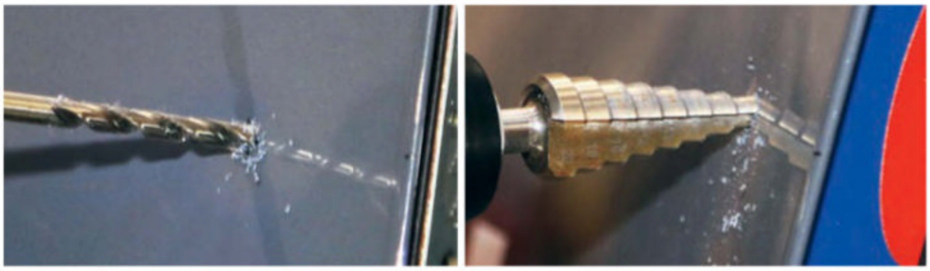
D6 Once the paint has dried, suitably sized holes can be drilled that will be utilised to secure the latch plate to the door frame.



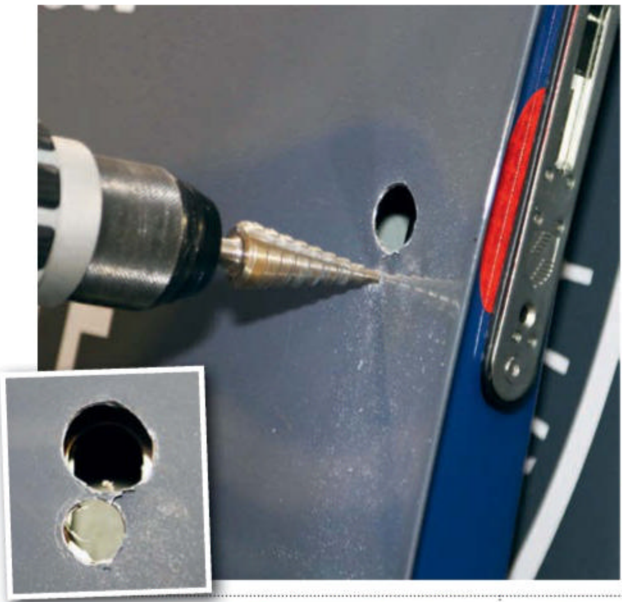
D7 Pop-rivets are preferred over screws, because they do not work loose with vibration. For corrosion resistance, these rivets are made from stainless steel.



D8 Experience is needed to line up the lock barrel hole accurately with the latch's mechanism. Once done, the position is marked accurately on the outer door skin.

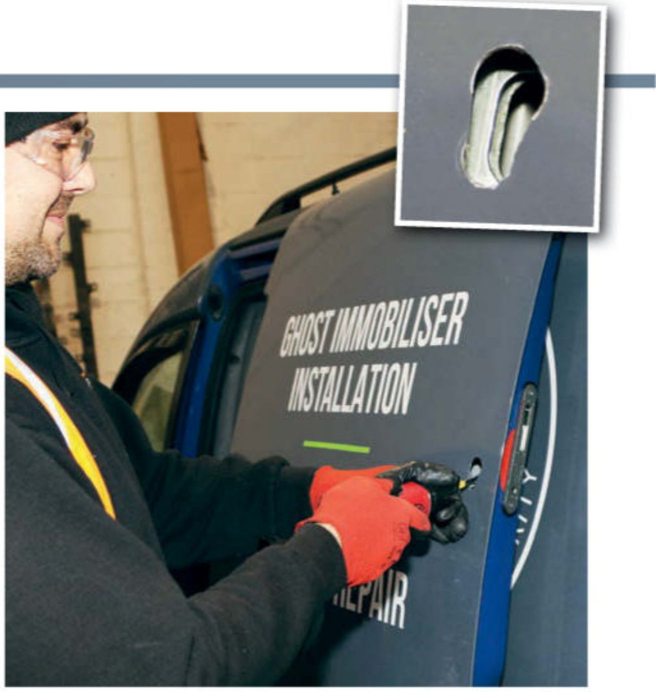


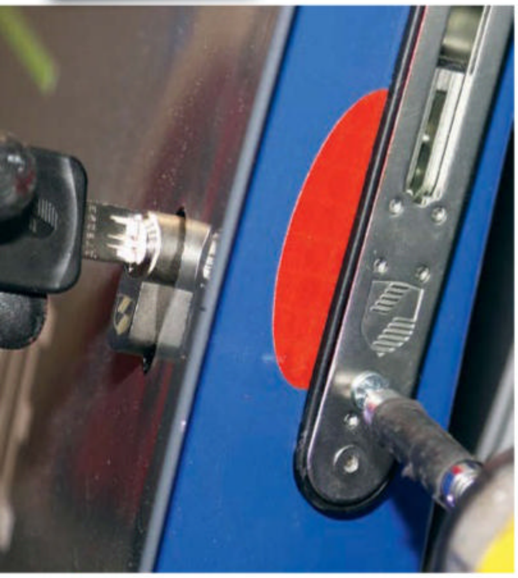
D9 A drill can be used to make the initial cut, followed by a core cutter, which produces a correct diameter hole accurately into the outer door skin, without bending the thin metal.



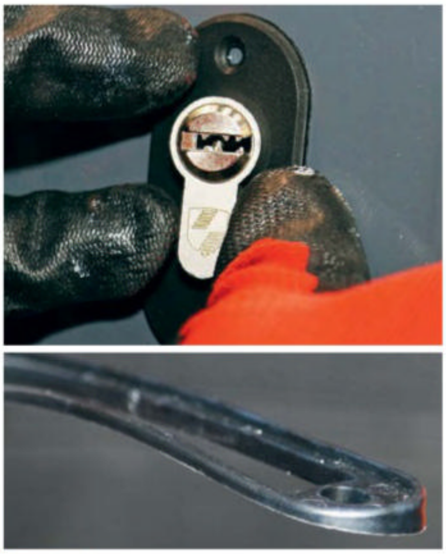
D10 ◀ As this lock barrel is not perfectly round, the same technique is used, as per Steps D2 and D3, where two holes are created...

D11 ▶ ...and a compact saw employed to create the correct shape.

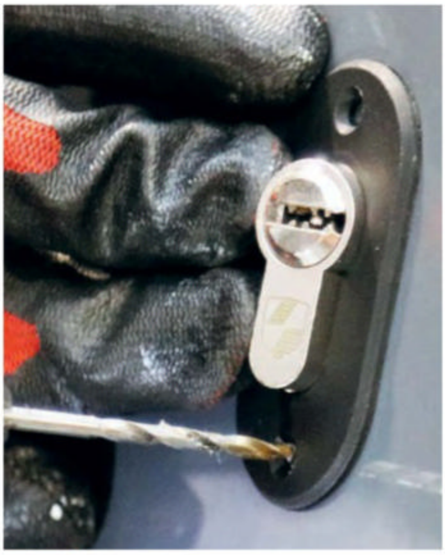




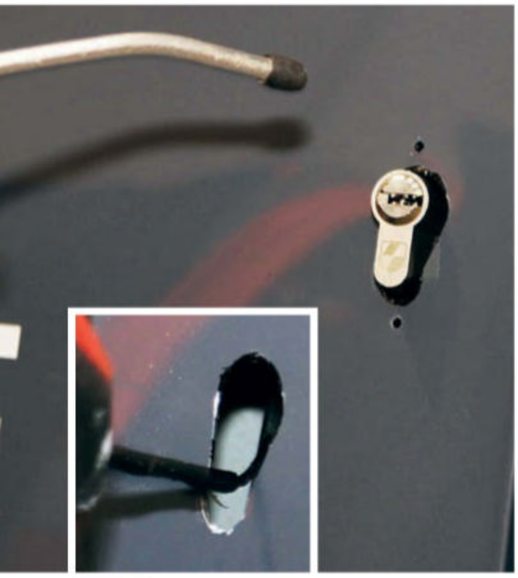
D12 The lock barrel is trial-fitted next. Note that is secured to the latch plate by a long, high-tensile steel screw, as pictured.



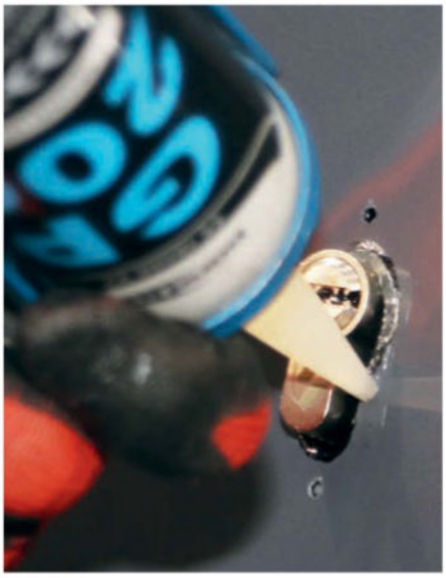
D13 Should all be satisfactory, the lock gasket is trial-fitted, noting that it is tapered, because the lock bolt is designed to sit on the panel at a slight angle.



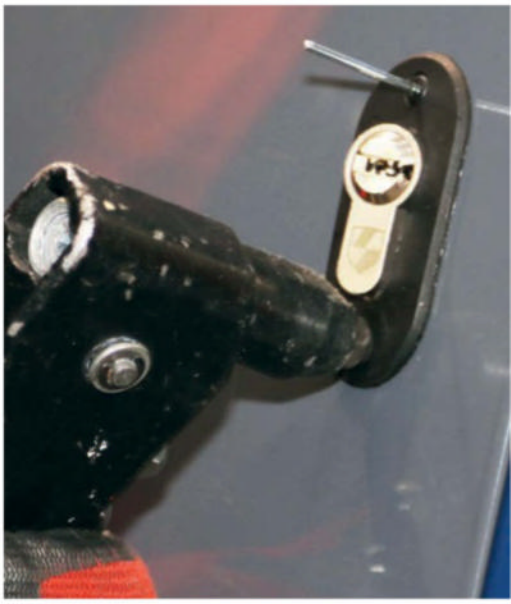
D14 The gasket is used as a template, to mark the position of the holes that need drilling into the door skin to hold it into place.



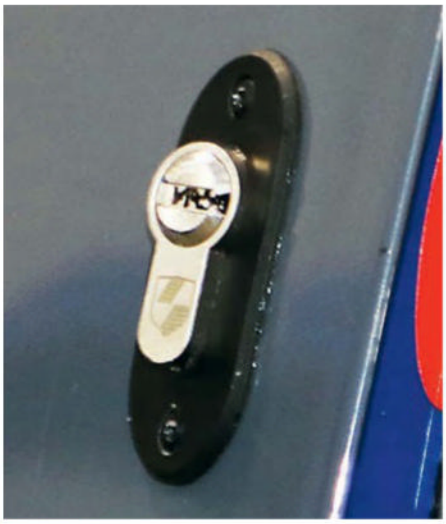
D15 Any metal swarf should be blown out of the aperture, before being treated with a rust-resistant paint.



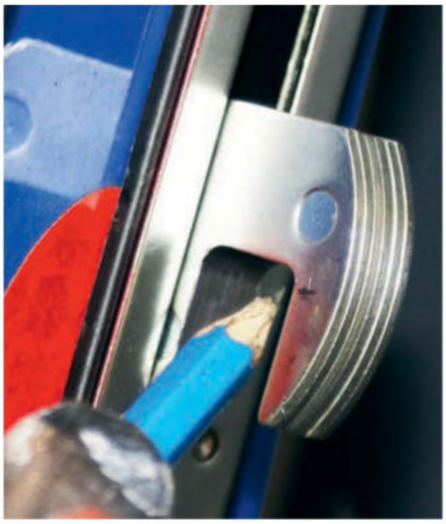
D16 Once the paint has dried, silicone sealant is applied, to prevent water from entering the door skin via the lock barrel.



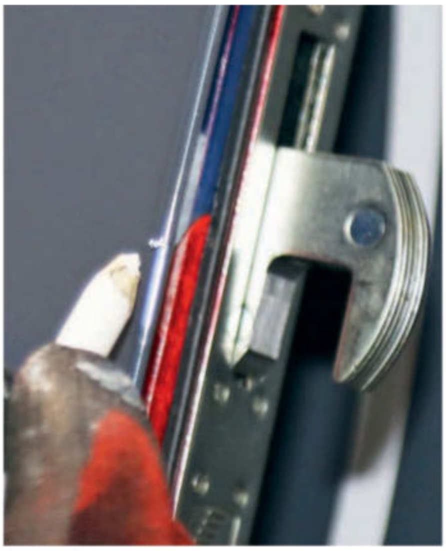
D17 The gasket is secured by a pair of black-painted stainless-steel rivets.



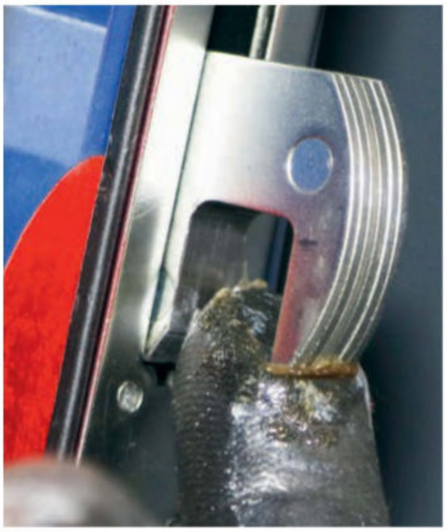
D18 The result is a neat installation – but the lock hook has nothing to act against to secure the door. Therefore, a suitable aperture needs to be created on the B-pillar.



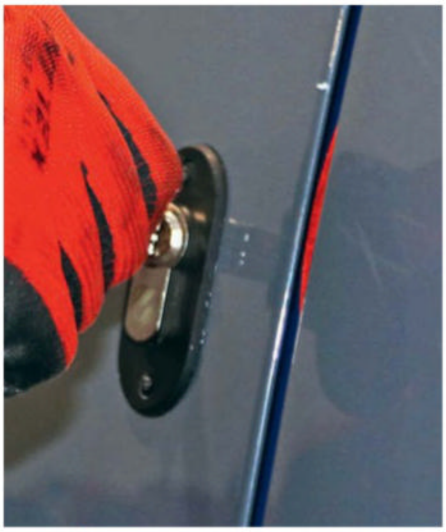
D19 This is done, by checking the hook lock's position, when activated. The installer, therefore, flips out the hook lock and marks a top point, where indicated.



D20 The position of the top mark is transferred to the door skin, so it is visible, when the door is closed.

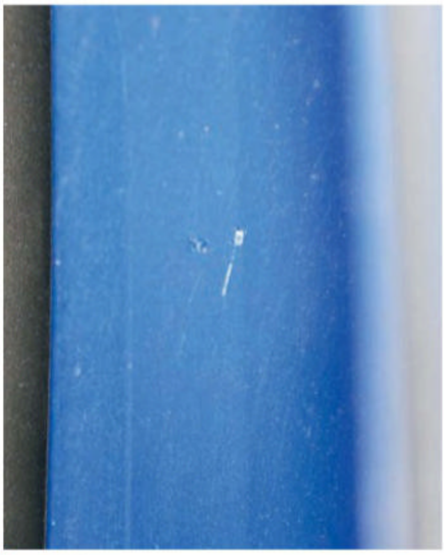


D21 Grease is then applied to the lowest point of the hook lock and the lock is retracted back into its plate, using the key.

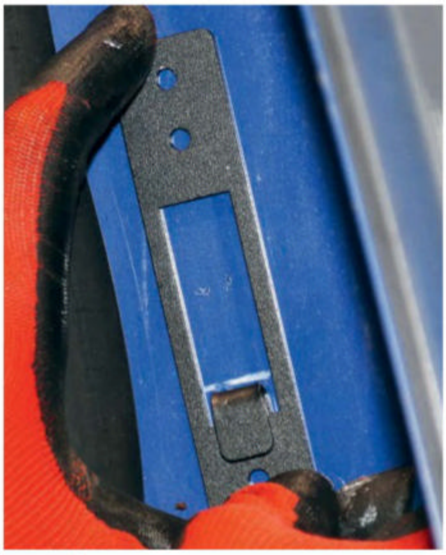


D22 The door is closed and the lock activated multiple times, so it strikes the car's B-pillar.

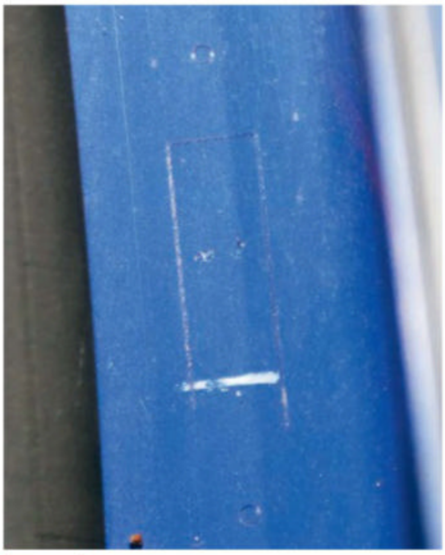
D23 The white mark on the door (Step D20) is also transferred onto the rear wing panel, so the reference point can be seen, from the inside, when the door is open.



D24 Once the door is opened, the grease and hook lock will leave a mark on the B-pillar, showing the lowest point at which the hook strikes the metal.

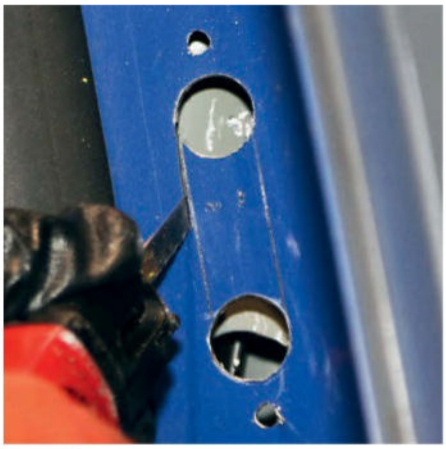


D25 As vehicle bodywork is too thin, a reinforced latch plate must be fitted. Using the two reference marks, the installer positions the latch plate onto the pillar...

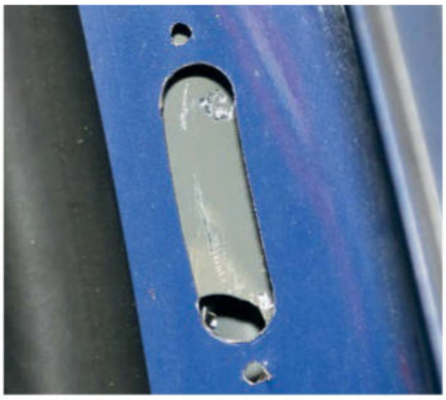


D26 ...and traces its position with a pencil. Checks are made, to ensure that nothing lurks behind the panel, which might become damaged.

⇨



D27 Using the same techniques, described in Steps D9 and D10, a suitable aperture for the lock plate is cut out.



D28 This B-pillar possesses a strengthening panel behind it and some protective primer has been removed during the cutting process. When rust-protective paint is applied, this area will be treated, too.

THANKS TO

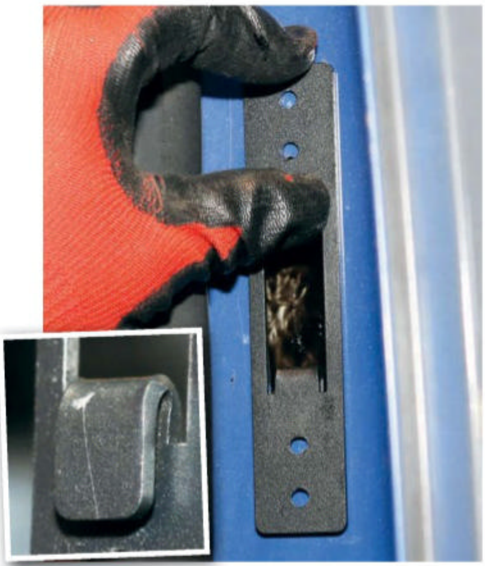
Vehicle Security Solutions Today (VSST) Ltd
www.vsst.co.uk

Tracking and Aftermarket Security System Association (TASSA) Ltd
www.tassa.pro

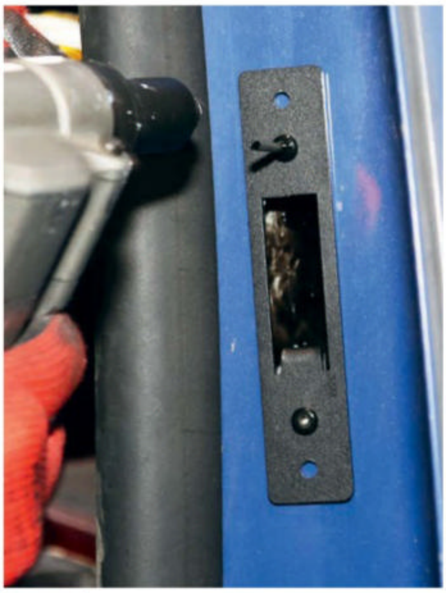
TVL Security – designers, manufacturers and suppliers of accredited physical security systems.
www.tvl-ltd.co.uk

ProtectAVan
www.protectavan.co.uk

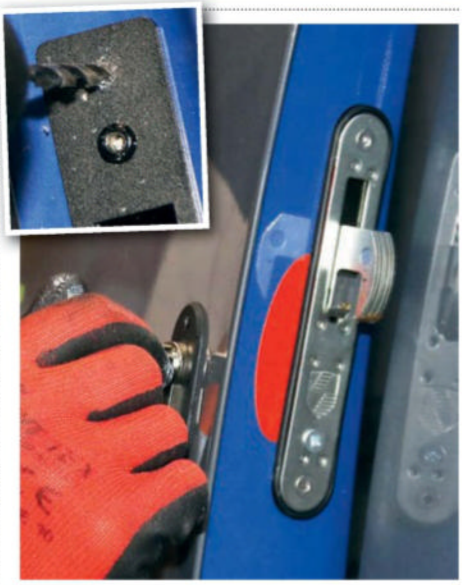
Thatcham Research
www.thatcham.org/pf/thatcham-security-certification



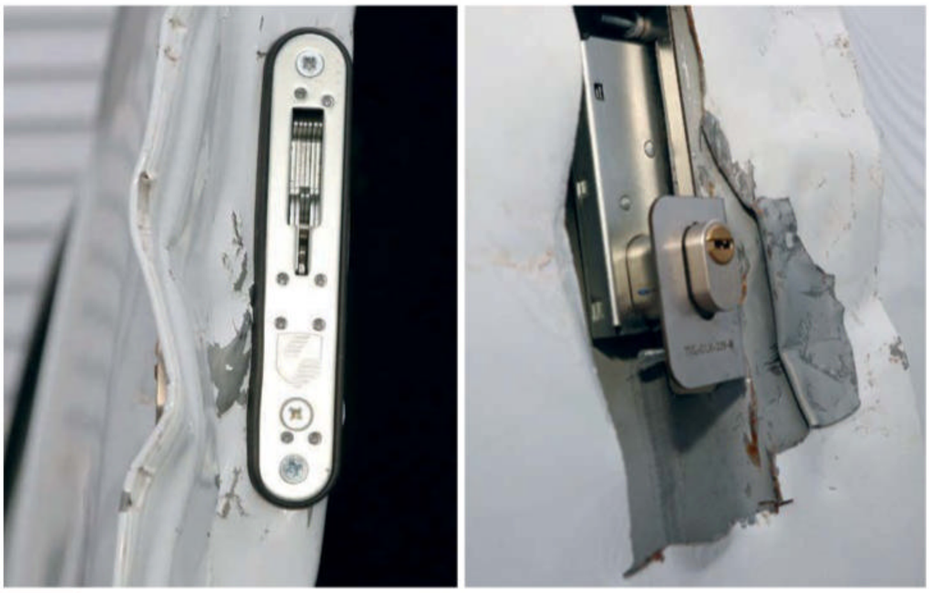
D29 Noting that the latch plate's thick metal hook rests on the lower edges within the panel, it is trial-fitted. When the installer is happy that the plate is in the correct position...



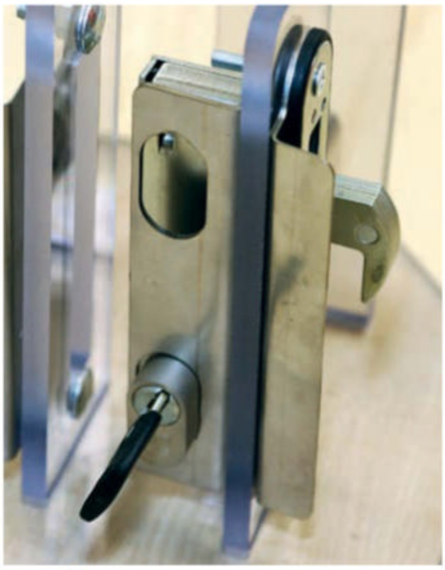
D30 ...the holes, which will be used to hold it into position, are drilled and stainless-steel pop-rivets are employed again to secure it.



D31 A second set of securing rivets is used, for extra strength, so as not to distort the B-pillar, should the lock be forced. Professionals tend to provide final alignment confirmations, before installing the fixings.



D32 This picture shows the amount of destruction that a thief has to undertake to access a hook lock, let alone overcome it. Note the extra reinforcing plate, fitted between the door skin and the lock barrel, on this example.



D33 Again, on this hook lock, extra steel reinforcing plates are available, dependent on vehicle application and owner preference.

GET THIS SEALEY TOOLS RECHARGEABLE HEAD TORCH WITH AUTO-SENSOR

AND SAVE £45!*

32 of your toughest car problems solved by our experts

CAR MECHANICS

SAVING YOU MONEY SINCE 1958

Ford Focus Mk3 1.0 EcoBoost

NEW PROJECT CAR

Touch screen repair VW Transporter

WIN Clarke 199-piece DIY toolkit with cantilever toolbox 3 prizes Worth more than £305

TIMING BELTS

3 BELT CHANGES from 1990s to modern day demonstrated

- Renault F-type single camshaft
- Peugeot/Citroën 2.0 EW10 petrol
- Volkswagen Group TSI 1.5 EVO

BMW 6-CYLINDER Water Pump

February 2025 £4.99

13 PAGE SPECIAL

DIAGNOSTICS Toyota Verso 1.8

SERVICING Hyundai i40 1.7 CRDi maintenance schedule

BUYING USED GUIDE Lexus IS F Quick & rare V8

Join thousands of satisfied subscribers & never miss an issue

SEALEY
HT104R
WORTH £26.34

By subscribing to *Car Mechanics*, you'll start saving money straight away. Use our great offer (below) to subscribe and you'll receive each monthly magazine for less than you can buy it in the shops. Hurry though, this is a limited time offer. Plus, we will send you a Sealey Rechargeable Head Torch free of charge.

Martyn Knowles, Editor

Since 1978 Sealey Tools has provided us with professional tools and workshop equipment from its base in East Anglia. For a limited time, Sealey are kindly offering to new *Car Mechanics* subscribers one of its superb head torches with auto-sensor.

Order your subscription today and you will receive a FREE Sealey Rechargeable Head Torch with auto-sensor.

3 EASY WAYS TO SUBSCRIBE

1 Go to shop.kelsey.co.uk/CME125

2 Call us 01959 543747** quote CME125

3 Scan the QR code →

Hotline open: Monday to Friday 8.30am-5.30pm. Calls charged at your standard network rate.

Terms and conditions: *UK Direct Debit or Continuous Credit Card offer only. You will pay £47.88 per year. Offer ends 31st July 2025. Savings based on the standard cover price of £4.99 plus Kelsey's standard postage price (£2.75) per issue. *Car Mechanics* is published monthly (12 issues per year). Your subscription will start with the next available issue and you will receive 12 issues per year. Your free gift will be despatched after first payment has been taken. Free gifts while stocks last. Prices correct at time of print and subject to change. If you decide to cancel your subscription we will put a stop to any further payments being taken and will send the remaining issues that you have already paid for. Other UK offers available. Your subscription includes the free *Car Mechanics* e-newsletter from which you may unsubscribe at any time. **Hotline open Monday to Friday, 8.30am-5.30pm. Calls charged at your standard network rate. For offers outside the UK visit shop.kelsey.co.uk/CME. For full terms and conditions, visit shop.kelsey.co.uk/terms. Data protection: We take great care in handling your personal details and these will only ever be used as set out in our privacy policy: shop.kelsey.co.uk/privacy-policy

CM Insider

Martyn Knowles brings you news and product reviews from the automotive industry

GSF Car Parts introduces new range of DriveTec door mirror units

DriveTec
MIRROR IMAGE
24 MONTHS
DriveTec
WARRANTY
TRUSTED BY MECHANICS
24,000 MILES

DriveTec
MIRROR IMAGE

▶ GSF Car Parts, has launched a new range of OE quality door mirror units under its rapidly expanding DriveTec brand. These are now available from its UK network of nearly 200 branches.

The new range comprises 99 part numbers covering the most common car, 22 passenger carrying vehicle (PCV) and 27 light commercial vehicle (LCV) applications. Both manual and electrically-operated models are available including heated variants. Examples of applications covered include the electric, heated mirrors on Ford Fiesta 2008-onwards as well as the electric mirrors on the Citroën Relay, Peugeot Boxer and Fiat Ducato 2006 onwards platform.

Due to the use of premium, OE-quality materials, the whole range is offered with a 24-month/24,000-mile warranty.

Senior Category Manager, Hardik Solanki, said: "We know there's great demand for these products. Damaged mirrors cause MOT failures and are a component with a high rate of replacement where the work is often performed by main dealers. The DriveTec range offers great value, without compromising on quality, allowing independent garages and consumers to replace complete mirror unit assemblies competitively."

The DriveTec range covers braking, batteries, wheel bearings, suspension and workshop consumables with an expanding range that also includes brake calipers, starter motors and alternators. A growing number of garages trust DriveTec for high performance and reliability at competitive prices.

Ring's Xenon220 bulbs – the brightest choice!

Xenon220
RING

▶ Ring Automotive, has continued to expand its range of bulbs for the aftermarket and has launched a new product line into its popular Xenon range: the **Xenon220**.

Ring has introduced its best performing halogen bulbs with the Xenon220, which is a like-for-like replacement of standard H4, H7 and H11 headlamp bulb types.

Ring's Xenon220 is a range of performance halogen bulbs that provide up to 220% more light on the road ahead. These cutting-edge headlight bulbs have up to 20% whiter light compared to the minimum legal standard, providing more light and improved visibility.

Providing a colour temperature that is up to 3700K means a whiter look in the headlamp and better reflections of road markings and signs for safer night time driving. They are E-approved and road legal so offer motorists instant improvements in visibility. Further, they are competitively priced so that the best performance bulbs can also mean the best value.

RRPs: **H4 £24.99 H7 £23.99 H11 £39.99**

HEVRA launches Bodyshop Membership to elevate workshop standards

HEVRA

▶ HEVRA (Hybrid and Electric Vehicle Repair Alliance) is proud to introduce the HEVRA Bodyshop Membership, a new initiative designed to support Bodyshops in efficiently handling electric vehicle (EV) repairs while maintaining the highest industry standards.

As the EV market continues to grow, Bodyshops need the right knowledge, tools, and support to manage repairs effectively. HEVRA Bodyshop Membership provides exclusive benefits to ensure members stay ahead of the curve, streamline their repair processes, and enhance their reputations within the industry.

Membership benefits include:

Unlimited Technical Support Gain access to expert advice and second opinions via telephone, email and WhatsApp.

Vehicle-Specific Repair Guides Stay informed with up-to-date documentation and repair procedures tailored to EVs.

HEVRA Portal Access A comprehensive resource hub filled with essential repair insights and best practices.

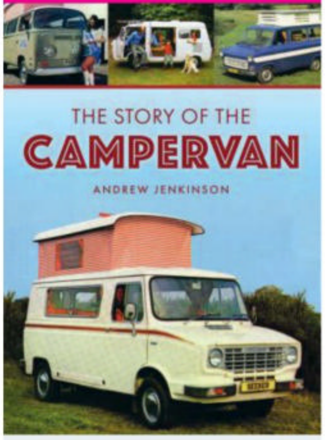
HEVRA Branding & Certification Use of the HEVRA name and logo to promote your business as a trusted EV repair specialist.

Test & Repair Plans Gain access to structured test and repair procedures to improve efficiency and accuracy.

Exclusive Tool Access Members receive recommendations and access to specialised tools suited for EV repairs.

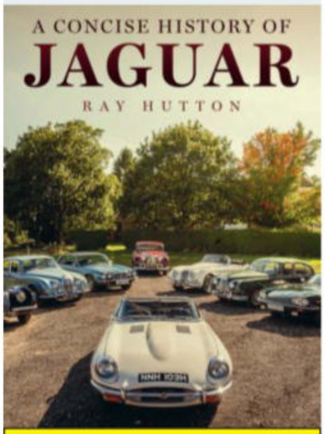
By joining HEVRA Bodyshop Membership, workshops can confidently take on EV repairs, enhance operational efficiency, and secure a competitive edge in a rapidly expanding market. For more information on becoming a HEVRA Bodyshop Member, visit **https://hevra.org.uk/hevra-bodyshop/**

News in Brief



The Story of the Campervan by Andrew Jenkinson

▶ This book covers the development of the campervan from the 1950s to the present day, showing how campervans have developed from converted commercial vans such as Commer and Austin in the 1950s, through Westphalia conversions of the VW Kombi, Ford Transits and Toyota Hi-Ace vans in the 1960s and 1970s. Manufacturers such as Hymer and Tigano entered the British market in the 1980s, alongside established makes such as Fiat, Peugeot and Talbot.



£15.99 RRP
www.amberley-books.com

A Concise History of Jaguar by Ray Hutton

▶ Motoring expert Ray Hutton reveals the full inside story of Jaguar, not only through its cars but also the personalities and changes of ownership that accompanied Jaguar. Based on the author's inside knowledge and expertise in the British car industry, this book is an essential companion to Britain's luxury sporting car manufacturer.

NEW FROM THE TOOL CONNECTION

9021
9022
9019
9020
LASER
LASER
LASER
LASER

New fluid extractors

9019 6 litre
£115.82 RRP
9020 6 litre
£146.30
9021 10 litre
£146.30
9022 10 litre
£176.78
www.lasertools.co.uk/
Product/9019
Product/9020
Product/9021
Product/9022

▶ Recent additions to the Laser Tools' range are these super-versatile fluid extractors, available in two capacities – 6 litres and 10 litres – and with options for manual operation or dual manual/pneumatic operation. Designed for automotive professionals, DIY enthusiasts, and general-purpose use, these fluid extractors are an essential addition to any workshop or home toolkit.

Part number **9019** is a manually-operated vacuum fluid extractor with a 6-litre capacity; **9020** is a pneumatic or manually-operated vacuum fluid extractor with a 6 litre capacity, which can be connected to a compressed air supply via a standard ¼in Euro adaptor; **9021** is the 10 litre version of the manually-operated vacuum fluid extractor and **9022** is a pneumatic or manually-operated vacuum fluid extractor with a 10-litre capacity, also compatible with a compressed air supply.

They feature wide fluid compatibility and are suitable for extracting all types of lubricating oils used in cars, motorcycles, and marine engines. Supplied with a 10mm x 1m main tube/adaptor and three additional extraction tubes (5mm, 6mm, and 8mm), ensuring compatibility with most vehicle dipstick tubes and offering flexibility for a variety of tasks.

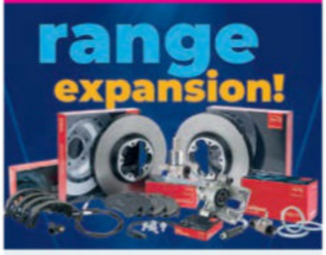
They are also suitable for non-corrosive, low-viscosity fluids like water. Beyond automotive use, these extractors are perfect for draining cisterns, fish tanks, sinks, and other household tasks.

Remove heavy corrosion from brake discs and calipers

£119.30 RRP
www.lasertools.co.uk/Product/8515

▶ Laser Tools' hand-operated Small Brake Disc Lip Removal Tool (**8515**) is the perfect solution, ensuring smooth operation and proper fitment of new pads. This quickly removes corrosion and trims back the lip on the disc face with precision. Hold it steady against the corrosion as the brake disc is turned – the super-hard, tungsten-steel cutter is the secret – effortlessly slicing through the lip and heavy corrosion with just a few turns of the disc. The result? A clean, smooth edge, ready for new brake pads. Replacement blades (**60036**) are available.

News in Brief



PartsinMotion.co.uk launches Apec range expansion

▶ Online distributor, **PartsinMotion.co.uk**, has expanded its range of Apec's premium quality range, including brake pads, discs, brake hoses, coil springs, suspension arms and calipers, now offering more than 21,000 part numbers in its ever-growing portfolio. Top applications in the new Apec range include brake pads for popular VAG models, wishbone/suspension arms to cover Vauxhall Insignia, brake calipers for Kia Picanto, brake discs for BMW 5-Series, X3 and X4, and coil springs fitting Vauxhall Corsa E. The Apec product range has been designed to offer enhanced quality and performance over OE parts for prestige vehicles. With 60 years of experience in the market, Apec has firmly established itself as a specialist in supplying the very best products to the sector. Visit here to find the latest new-to-range Apec products at **PartsinMotion.co.uk**. You can enter the vehicle registration to search for the right part or speak to one of PartsinMotion.co.uk's product experts to find out more about the brand's fast delivery and prices.

Clarke

COMPETITION WINNERS

GAS HEATERS

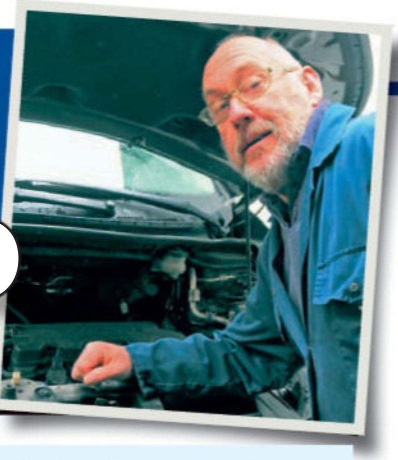
R McNAUL
R CHAPELHOW
G PURVES

TOOL CHEST & TOOL KIT

E MacGUINNESS
P BISSET

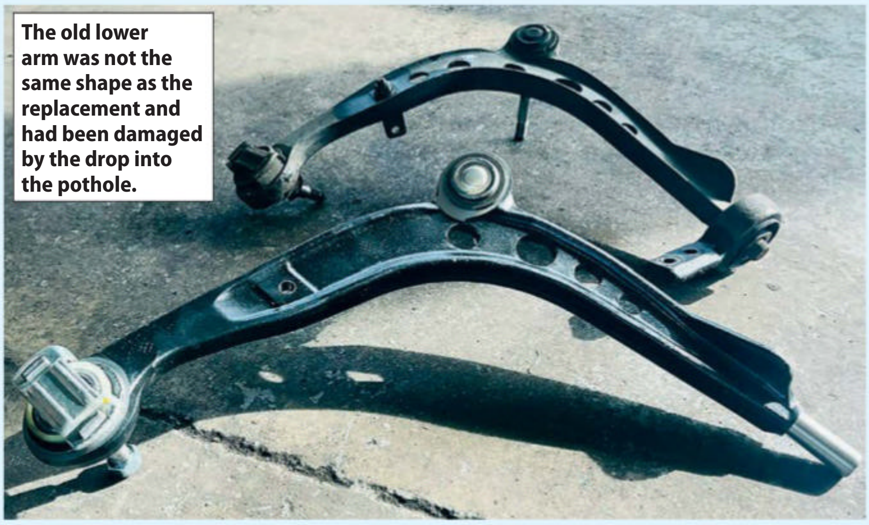
Tales from the workshop

Fixing advice from our garage proprietor **Steve Rothwell**



BMW 3-SERIES

On a bender



The old lower arm was not the same shape as the replacement and had been damaged by the drop into the pothole.

I have over the years seen several bent steering and suspension components, and the owners often when bringing the motor in for repair have a number of different versions of the incident.

I have heard, "I left it parked and when I came back" quite often along with "I only clipped the kerb, I wasn't going fast".

But now quite genuinely many give the source of the bent component as a pothole that was not spotted. This is now too often the case and a quite deep pothole which is filled with rainwater can easily be missed.

This 1998 BMW 318 tds had been the victim of such a pothole and was now suffering from a very poor sense of steering. The BMW was wandering across the road and the owner understood they should not continue driving in this state.

Amazingly the wheel and tyre were fine, but the lower suspension arm was distorted and needed renewing. The sad part of the tale is that the driver did not stop at the time and has no details of the incident on which to pass the cost on to the local council. With the new lower arm fitted, and the tracking checked and adjusted, they were happy that at least the BMW was now driving smoothly again.

HONDA CIVIC

Scrubbed tyre

This 2001 Honda Civic was driving well and giving its owner no cause for complaint. It was only when the motor was parked on a steep hill and the owner decided to turn the steering, so the front wheel pointed into the kerb that the wear on the inner edge of the tyre was noticed.

They were at first just going to get the tyres replaced but decided to ask me to check things out first, to discover why the tyre had worn in this manner.

Jacking up the front of the Civic it was easy to diagnose the cause of the tyre scrubbing as the track rod end had quite a bit of play in it. Actually, I was surprised that the owner had not detected the play in the steering, but I suspect like many of these problems, that the play had increased over a period of time and gone unnoticed.

It certainly would have been picked up at the next MOT though, so was a job worth doing. A new track rod end was fitted and the tracking set before fitting two new front tyres. The owner may not have noticed the play before, but they did now notice the difference.

Wear in the track rod end had caused the tyre to scrub. Its replacement along with the tracking adjusting was needed before replacing the tyres.

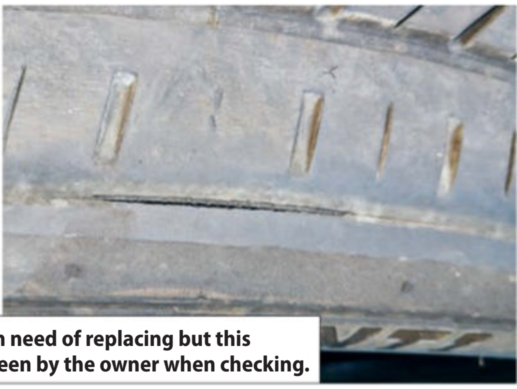
MERCEDES-BENZ C-CLASS

Tired tyre

When I worked in the police garage many years ago, I remember one of the traffic officers coming back in with a despondent look – he had just stopped a motorist with two bald tyres. Asking them if they ever checked the tyres, they replied yes, every week. But then they went on to say that they didn't really know what they were looking for.

I had a similar situation with a customer who owned this 2018 Mercedes-Benz C43 AMG, but in this case the tyre treads were good, and the problem was not so easy to spot. It was only when the motor came in for a service that the inside edge of the tyre could be seen to be in a sorry state and the tyre would need to be replaced. Once the wheel was off, the inner sidewall was also seen to be a little out of shape and so this was caught just in time.

Both front tyres were renewed – and after a check of the rears, these were found to be much newer and all OK.



The tyre was certainly in need of replacing but this damage had not been seen by the owner when checking.

SUBARU IMPREZA WRX

Leaking engine sump gasket

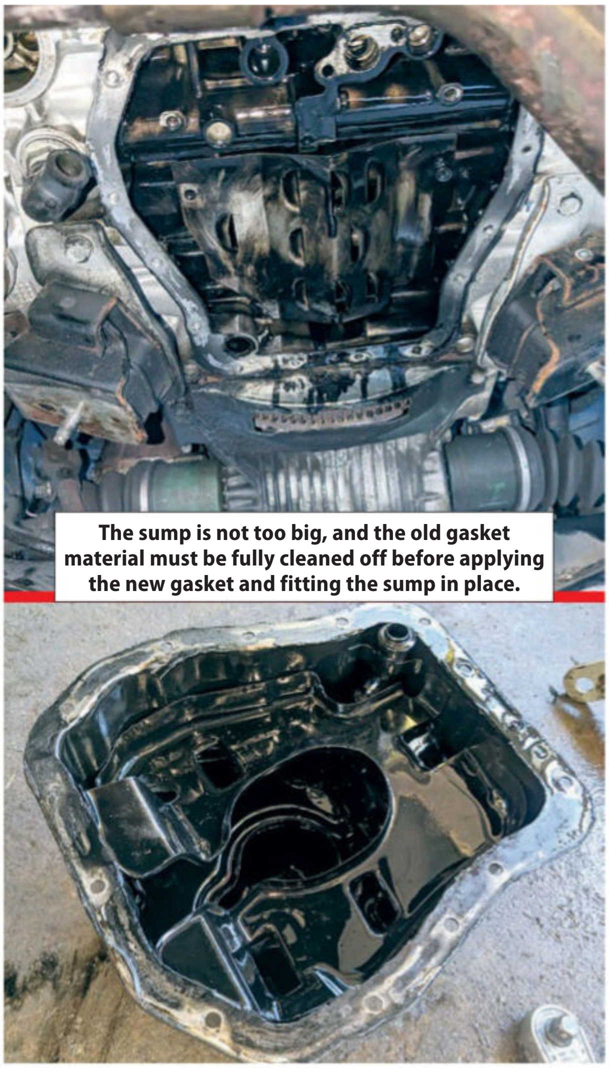
Oil leaks are annoying, and the source can range from a simple oil pressure switch to something a lot harder to fix such as a rear main oil seal that requires the engine removing.

The leak on this 2005 Subaru Impreza 2.0 turbo, was all around the base of the sump pan and the engine higher up appeared to be dry. Cleaning off the oily mess before running up the engine again, a fresh trickle of the messy stuff could be seen originating from the edge of the sump pan at the join with the base of the engine block.

The job of removing and refitting the sump on this engine is a 1.8-hour job, and removing the old gasket material was the biggest challenge.

With the sump cleaned off, both the sump pan and engine block face, the new gasket comes in a tube and is applied to the face before fitting the sump up in place and tightening the bolts to 5Nm.

I then like to allow the gasket a little time to set before refilling the oil and so it was time for a nice cuppa, after which the oil was filled with fresh oil and a new filter fitted. The Scooby was now ready to go out without its embarrassing oil drips.



The sump is not too big, and the old gasket material must be fully cleaned off before applying the new gasket and fitting the sump in place.

RENAULT CAPTUR

Hidden spark plugs

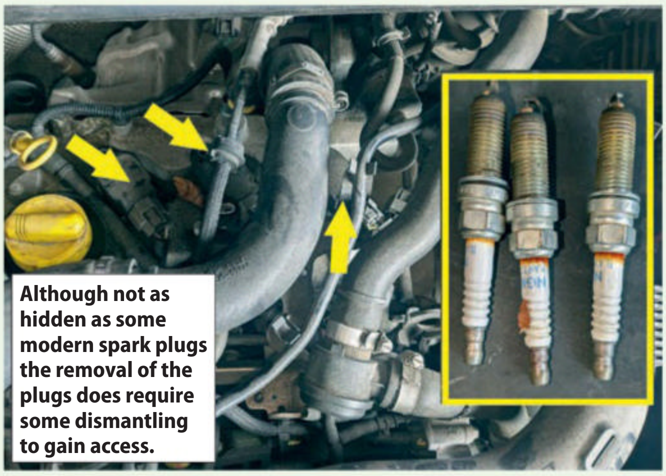
One of the first vehicles I can remember where the inlet manifold needed to be removed to replace the spark plugs was a 2001 Jaguar S-TYPE 3.0 V6. I was surprised at the amount of work needed to simply change plugs.

With the introduction of the longer-lasting Iridium tipped spark plugs, manufacturers have taken the opportunity to give less consideration to the time taken to replace the spark plugs. The longer service interval has made this less of a consideration.

The three spark plugs in this 2015 Renault Captur 0.9 TCe were not as difficult to change as the Jaguar but for a small engine they were still quite well hidden and required the removal of an induction pipe to allow access.

It is often the case now on many modern engines that the spark plugs can be hidden under an induction pipe, a manifold or a more complex engine cover and so the simple job of renewing spark plugs should never be taken for granted.

The rest of the service went smoothly on this Renault and the motor was soon returned ready to go another year back to its owner.



Although not as hidden as some modern spark plugs the removal of the plugs does require some dismantling to gain access.

Follow Steve on X: www.twitter.com/cmtips

MITSUBISHI COLT ATTIVO

Rusty filter

It can be the case that low mileage vehicles are the most challenging to service. I have several older customers who cover often less than 1000 miles a year and when their vehicle comes in for the annual service and MOT the decision then needs to be made what needs to be done.

Very often the compromise is to change the oil and filter every other year.

The owner of this 2008 Mitsubishi Colt Attivo 1.1 called in a panic one morning as she had just seen a large puddle of oil under her vehicle. The best option with such a large oil leak was to recover the Mitsubishi back to the workshop – this is what was done.

The oil leak was soon spotted – a very corroded oil filter. The rust had eaten completely through the body of the filter and was now allowing the engine oil to pump out.

With a new oil filter fitted and the engine filled with fresh oil, the three-pot engine sounded quite smooth. When the owner collected the motor, she was asked when the filter was last changed, to which she replied that with the low mileage she covers it had not needed changing in the ten years she had owned the Colt!

The filter had been in place for several years, and the corrosion on the outside had eventually breeched the metal allowing the oil inside to escape.

JAGUAR XF

Door locking problems

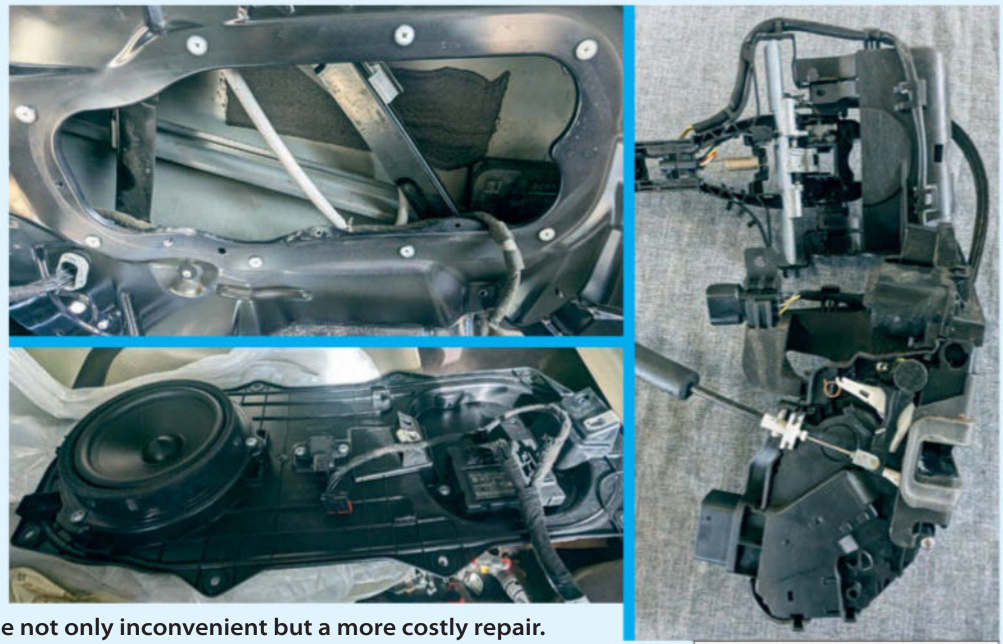
Clicking the remote to lock the doors on this 2014 Jaguar XF, the owner heard the doors lock and then within a second the sound of the doors unlocking again could be heard. He opened the door and slammed it shut, relocking the doors which this time worked.

After the third time of this happening, he decided that it would be a good idea to get this looked at before the locks failed to work. He was also aware that if the lock failed in the locked position this would be not only inconvenient but a more costly repair.

Once the Jaguar was in the workshop, after a preliminary check to ensure that the electrical loom between the door and the body was in good order, I removed the door card to check the internal wiring and the lock assembly.

With all the internal wiring and the release cables looking to be correctly positioned, it was decided that the lock did need replacing and this was the source of the problems.

Access is via the speaker panel, which once removed, gives access to take out and replace the door lock assembly. Once completed the central locking was behaving normally again.



The door card was easily removed, and the job was a lot easier than it could have been if the door lock had jammed closed. The lock assembly can be accessed after removing the panel holding the speaker.

TOYOTA RAV-4

Cable concern

It is often the case that something that would not be given a second glance by most becomes the target of scrutiny by others. Sometimes this may be a notable concern and at other times it is not.

One of our customers had just purchased a 2003 Toyota RAV4 2.0 petrol for his son, who had passed his test a couple of years ago, but to date was depending on the use of his parents' vehicle.

The purchase of the Toyota was supposed to make life much simpler for all concerned, but in the short term was causing more problems. The son was questioning every aspect of the newly received vehicle and for some reason was concerned that it had been badly maintained. Deciding that asking me to give the Toyota a good look over to qualm the concerns of his son, the motor duly arrived at my door and was put on the ramp for a good inspection and check over.

When the son collected his gifted Toyota, he was keen to show where the wiring had in his mind been "got at" and opened the bonnet to show the loom going into a plastic sleeving.

After I convinced him, this was normal and showed him another vehicle I had in the workshop he was much happier that perhaps his concerns were misplaced.

Most owners would probably not give this a second glance, but to this new owner the plastic sheathing around the loom presented a serious concern.

MG ZS

Blowing exhaust

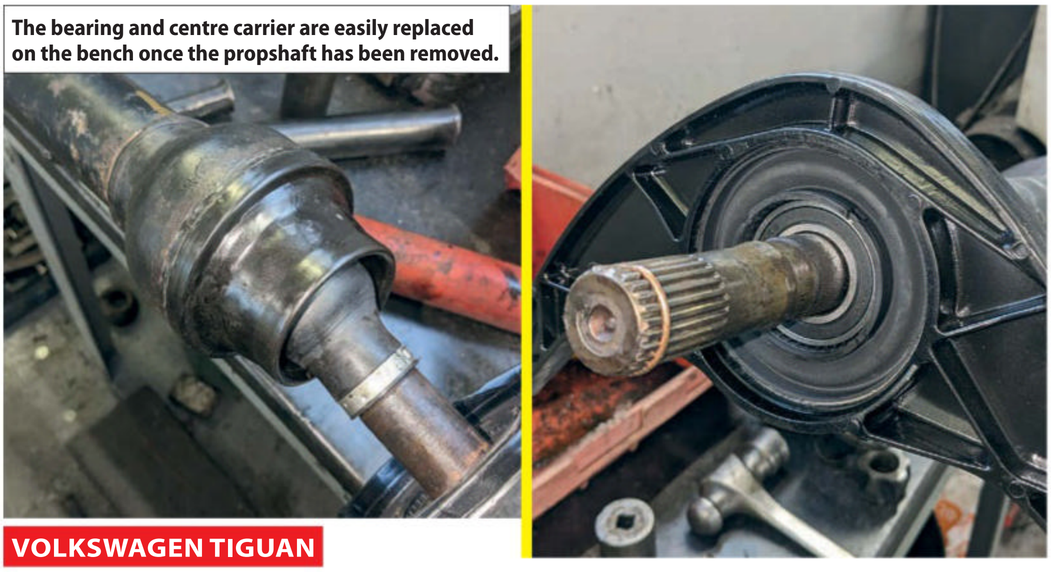
The exhaust blow on this 2004 MG ZS 2.5 petrol was coming from a very corroded flexible pipe. The section of pipe also included the catalytic converter. This of course put the cost up, and it was considered to fit a new flexible section into place.

The owner was however quite happy that the original Cat was now 20-years-old and fitting the completely new section would be a worthwhile investment. This reminded me of the days when catalytic converters were first introduced, and we heard horror stories that they would need replacing every few years. This certainly did not turn out to be the case.

With a flange fitting at both ends, the replacement job of this section of exhaust was not going to be too much of a concern, and even if the bolts had not come undone (which they did) then they could easily have been ground off.

With the old pipe removed, the new catalytic converter, complete with the new flexible section, accompanied by a couple of new gaskets, was fitted into place and secured with new bolts.

With the flexible section failed it made sense to replace the aging catalytic converter and the flexible section as a complete unit.



The bearing and centre carrier are easily replaced on the bench once the propshaft has been removed.

VOLKSWAGEN TIGUAN

Vehicle shudder points to propshaft bearing

▶ This VW Tiguan, like its bigger brother the Touareg, appears to suffer from a propshaft centre bearing failure. I have not seen as many of the Tiguan propshaft problems as on the Touareg, but this may be due to me not having many customers who own a Tiguan.

The owner of this 2012 VW Tiguan 2.0 TDI is a regular customer and recently came in to see me complaining of the classic vehicle shudder symptoms that are associated with the propshaft centre bearing failure problems.

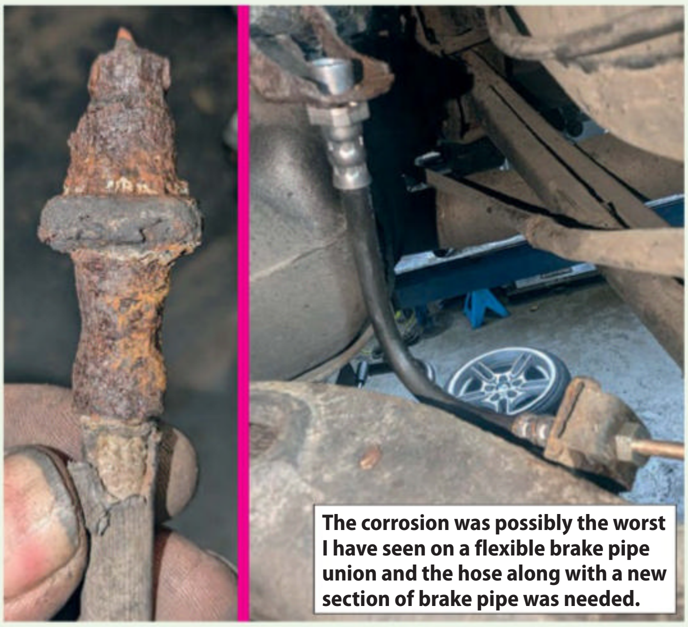
With the VW up on the ramp, a quick inspection soon confirmed that the vehicle vibration the owner was complaining of was indeed due to the centre propshaft bearing having failed.

Having done a few of these now, this is becoming quite routine, and once the propshaft has been removed the centre bearing complete with the centre bearing carrier can be replaced quite quickly.

With the new parts fitted on the propshaft, the centre joint was greased up and the back and front sections of the propshaft reunited. With the new boot fitted in place, the propshaft was ready to bolt back up into position.

BMW 3-SERIES

Corroded brake pipe union



The corrosion was possibly the worst I have seen on a flexible brake pipe union and the hose along with a new section of brake pipe was needed.

▶ One look at the brake pipe union on this 1996 BMW 318i and I knew that there was no way that the brake pipe was going to separate from the corroded brake union on the flexi hose.

This has been spotted by the owner during a check over and he was justifiable concerned that the brake pipe and the hose needed renewing. It surprised me to see that there had been no notes of this corrosion on the last MOT which admittedly had been nine months ago, but from the state of the union on the brake hose, this had not suddenly happened overnight.

The new hose was ordered up and the task of fabricating the new brake pipe in kunifer was undertaken. With the new pipe fitted and secured in position, the new hose had arrived and was fitted, leaving just the system to be bled out.

Once the brake system was flushed with fresh fluid, the owner was happy that the brakes were not going to let him down.

FORD FOCUS

DMF fun

▶ Having heard a slight noise when giving the engine of this 2015 Ford Focus 1.5 TDCi a quick rev, the owner had concerns that something was not quite right. The problem slowly developed, and the noise was now appearing at gear changes.

The sound and intensity of the noise then became stronger and at this point the owner decided that possibly getting the problem looked at now would be a good idea, to possibly prevent further damage if something bad was developing.

Once I had listened to the noises emitted from the transmission during light revs and when changing gear, I deduced that this sounded like a DMF failure and with the owners OK, I removed the gearbox to investigate.

Sure enough with the gearbox out I could see that the rotational movement in the DMF was excessive. A new clutch and Dual Mass Flywheel would be needed.

The job on this Focus is given a book time of 4.1 hours for the complete job, but it can be the case that a badly worn DMF that has rotated across the tops of the flywheel bolts can slow things down a little.

Once this Focus was up and running again with the new DMF and clutch, it sounded much quieter when changing gear.

The outer face of the flywheel had spun covering the securing bolts, I needed to force the outer section back before being able to remove the securing bolts.

WIN WIN WIN WIN WIN WIN

Win Clarke

CAR MECHANICS COMPETITION

Air equipment

One reader will win this air compressor and the two air tools.

1 KIT to WIN WORTH OVER £340

Portable 3hp V-twin compressor

RRP £286.80 including VAT

Direct-drive V-twin compressor with a 14.5cfm air displacement. Fully automatic and fitted with a regulator for controlled air pressure. Ideal for use with air tools and all common spray equipment.

- 230V
- 3hp motor
- Air displacement: 14.5cfm
- 50-litre air receiver
- Maximum operating pressure: 8 bar (116psi)
- Dimensions: (LxWxH) 710x360x650mm
- Weight: 38.5kg

3HP
Raider 15/550
Clarke
RAIDER
air
Clarke air
Clarke air

RAIDER 15/550

CAT113

RRP £25.19 inc VAT

3in cut-off tool ▲
Designed for cutting auto body panels, light sheet metal, nuts and bolts, plus exhaust, silencer or radiator hose clamps.

CAT108

RRP £28.79 inc VAT

▶ ½in reversible air ratchet
A versatile, reversible tool ideal for automotive and workshop use. Fitted with a rubberised comfort grip.

HOW TO ENTER: Entry is free. **ONLY ONE ENTRY PER HOUSEHOLD PLEASE.** Follow the instructions below. No correspondence can be entered into. The one correct entry chosen at random will win this air equipment. **Closing date for entries is April 1, 2025. Results will be published in the May 2025 issue – due out April 18.**

To enter this competition simply go to the website below and input your details – or use the QR code

Please visit our website

https://bit.ly/3Et2SCv

and follow the instructions on the page to enter the Clarke competition

Type the above into a browser address line and NOT a search engine

Car Mechanics *magazine will only use the data you supply on your entry to contact you if you are the winner. The winner's details will be passed on to Clarke International Ltd for the sole purpose of organising the delivery of your prize. All competition entries will be held securely until the prize draw has been made and then securely disposed of within seven days of the winners being chosen. The winners' details will be held for a period of one month until the prize has been dispatched and received, then they will be securely disposed of.*

BACK ISSUES

ORDER DIRECT via **shop.kelsey.co.uk/single-issue/car-mechanics-magazine**

FEBRUARY 2025

Timing Belts • Project Ford Focus Mk3 1.0 EcoBoost, Pt1 • VW Transporter T6 Touchscreen DIY Repair • BMW 6-cylinder Water Pump Renewal • Class of 1975 • Buying + Owning: Lexus IS F • Service Bay: Hyundai i40 1.7 CRDi • Electronic Diagnostics: Toyota Corolla Verso 1.8 • Index 2024.

JANUARY 2025

Guide to BEVs • Project VW Caravelle 2.0 TDI, Pt7 • Product Test: Tyre Inflators • Timing Belt Clinic: Ford Focus Mk2 1.6 Ti-VCT • Buying + Owning: VW Golf Mk7 • BMW 5-Series Oil Cooler & Oil Filter Housing Gaskets • Service Bay: Jaguar F-PACE 3.0 TDV6 • Electronic Diagnostics: Alfa Romeo Giulia 2.2D.

DECEMBER 2024

Work Safely on DIY car maintenance • Project VW Caravelle 2.0 TDI, Pt6 • ZF 6-speed Auto Gearbox Service • Porsche Boxster Window Regulator • Buying + Owning: Land Rover Freelander 2 • BMW 1-Series Front Wing Swap • Service Bay: Ford Mondeo 2.0 TDCi • Electronic Diagnostics: Volvo XC90 2.4 D5.

NOVEMBER 2024

Gadgets for your Garage • Automatic Gearboxes • Project VW Caravelle 2.0 TDI, Pt5 • Project BMW 335i, Pt8 • Insignia Tailgate Switch Mechanism • Timing Belt Clinic: VW up! • Buying + Owning: Ford Focus ST Mk3 • Service Bay: Kia Sportage 1.6 T-GDI • Electronic Diagnostics: Land Rover Discovery Sport 2.0D

OCTOBER 2024

Turbochargers & Superchargers • Project VW Caravelle 2.0 TDI, Pt4 • Project BMW 335i, Pt7 • Focus Mk2 Door Mirror & Electric Windows • Buying + Owning: Hyundai ix20 • Audi A6 2.0 TDI Oil Pump • Service Bay: Peugeot 108 1.0 • Electronic Diagnostics: Mitsubishi Outlander PHEV.

SEPTEMBER 2024

Understanding Wet Belts • Project VW Caravelle 2.0 TDI, Pt3 • Project BMW 335i, Pt6 • Hyundai Santa Fe Droplinks & Rear Bushes • Buying + Owning: Audi A4 B8 • Porsche Cayman S Discs & Pads • Service Bay: Suzuki Ignis SZ-T Dualjet • Electronic Diagnostics: Ford Transit Custom 2.2D.

AUGUST 2024

A Guide to DIY Painting • Project VW Caravelle 2.0 TDI, Pt2 • Project BMW 335i, Pt5 • Clutch Clinic: Ford Focus Mk2 1.6 petrol • Buying + Owning: Nissan Qashqai Mk2 • Vauxhall Zafira Cabin Filter • Service Bay: Citroën C3 Picasso 1.6 HDi • Electronic Diagnostics: Renault Captur 898cc.

JULY 2024

45 Used Buys under £10k • A Guide to Steering & Suspension • Project VW Caravelle 2.0 TDI, Pt1 • Project BMW 335i, Pt4 • Project Bentley Flying Spur, Pt5 • Buying + Owning: Mazda RX-8 • Service Bay: BMW 118d 2.0 • Electronic Diagnostics: Nissan Note 1.6 petrol.

JUNE 2024

Pass the MOT first time • Project BMW 335i, Pt3 • Project Bentley Flying Spur, Pt4 • Product Test: Car Polishers • Buying + Owning: Volvo XC90 • Porsche Boxster 2.7 Alternator • Service Bay: Nissan Juke 1.6 FWD • Electronic Diagnostics: Vauxhall Corsa E 1.4 16v petrol • Looking back at diesel.

MAY 2024

Lubrication Explained • Project BMW 335i, Pt2 • Project Bentley Flying Spur, Pt3 • Vauxhall Insignia turbo intake pipe • Wet Belt Disasters • Buying + Owning: Peugeot 208 • Ford Focus Front Wing Swap • Service Bay: Jaguar XJ X358 2.7D • Electronic Diagnostics: Volkswagen Fox 1.2.

APRIL 2024

Hand Tools • Project BMW 335i, Pt1 • Project Bentley Flying Spur, Pt2 • Product Test: Head Torches • Regenerative Braking • Buying + Owning: Mercedes-Benz S-Class • History of the Car Radio • Service Bay: Kia Sorento 2.2 CRDi • Electronic Diagnostics: Vauxhall Insignia 2.0 CDTi.

MARCH 2024

Hybrids • Project Bentley Flying Spur, Pt1 • Renewing a Front Wheel Bearing (Ford Focus) • DSG Oil & Filter Change • Modern Oil Investigation • Vauxhall Meriva Flexipipe Swap • Buying + Owning: Alfa Romeo Giulia • Service Bay: Suzuki Swift 1.2 Dualjet • Electronic Diagnostics: Citroën C5 2.0 HDi.

FEBRUARY 2024

Sensors • Clutch Clinic: BMW 1, 3, 5-Series DMF + Clutch • Low-Pressure EGR Filter Clean • Brake Disc Skimming Investigation • DIY Wheel Alignment • Alternative Alternator Fix • Buying + Owning: Jaguar XJ X351 • Service Bay: MG ZS 1.0 T-GDI • Electronic Diagnostics: Fiat 500 1.2 • Spotlight: VAX SpotWash.

JANUARY 2024

On-and-off Car DPF Cleaning • Project Lexus IS 250, Pt6 • Project Range Rover L322 4.4 V8, Pt8 • Haldex Gen 4 Coupling Oil & Filter • Product Test: Bluetooth FCRs • Buying + Owning: Kia Stinger 2017-on • Service Bay: BMW 335d xDrive • Electronic Diagnostics: VW Golf 1.6 TDI • Previous Project Cars, Pt2.

DECEMBER 2023

Modifying your Car • Project Lexus IS 250, Pt5 • Project Range Rover L322 4.4 V8, Pt7 • Clutch Clinic: Ford Mondeo 2.0 TDCi Mk4 • Buying + Owning: Tesla Model 3 2017-on • Pothole Problem • Service Bay: Citroën C3 1.2 • Electronic Diagnostics: Jaguar F-PACE 3.0 TDV6 • Previous Project Cars, Pt1.

NOVEMBER 2023

Kit out your Workshop Supplement • Vehicle Networking • Project Lexus IS 250, Pt4 • Project Range Rover L322 4.4 V8, Pt6 • Saving a BMW Z3 • Buying + Owning: Nissan GT-R 2009-2022 • Service Bay: Volvo C70 D3 • History of UK Registration Numbers • Electronic Diagnostics: Mercedes-Benz C320 CDi.

OCTOBER 2023

DIY Servicing • Project Lexus IS 250, Pt3 • Project Range Rover L322 4.4 V8, Pt5 • Buying + Owning: Vauxhall Insignia 2008-2017 • Product Test: Cordless Vacuum Cleaners • 30 Car Accessories and Practices from long ago • Service Bay: Suzuki SX4 S-Cross 1.6 • Electronic Diagnostics: Audi A3 8P 2.0 TDI.

SEPTEMBER 2023

A Guide to Aircon • Project Lexus IS 250, Pt2 • Project Range Rover L322 4.4 V8, Pt4 • CM Visit: Burton Power • Buying + Owning: VW Beetle 2012-2018 • BMW Front Lower Suspension Arms • Clutch Clinic: Vauxhall Astra J • Service Bay: Skoda Citigo 1.0 • Electronic Diagnostics: MINI Cooper S D F55.

AUGUST 2023

An introduction to ECUs • Project Lexus IS 250, Pt1 • Project Range Rover L322 4.4 V8, Pt3 • Summer Fun! • Buying + Owning: Toyota GT86 2012-2021 • Timing Belt Clinic: Ford Mondeo 2.0 TDCi • Service Bay: Vauxhall Astra J 1.6 • Electronic Diagnostics: VW Golf 1.4 TSI DSG • Diagnostics Case Study: BMW 7-series.

JULY 2023

30 Used Cars for under £10k • Fixing Hard Tops • Project Range Rover L322 4.4 V8, Pt2 • Project Ford Mondeo 2.0 TDCi, Pt6 • Hybrid Faults & Fixes, Pt2 • Buying + Owning: Fiat 124 Spider 2016-2019 • Service Bay: Toyota Avensis 2.2D • Product Test: Ratchet Spanners • Electronic Diagnostics: Peugeot 208 1.2 non-turbo.

JUNE 2023

Tackling Smart Repairs • Project Range Rover L322 4.4 V8, Pt1 • Project Ford Mondeo 2.0 TDCi, Pt5 • Hybrid Faults & Fixes, Pt1 • Buying + Owning: BMW i3 2013-on • DIY Garage Makeover • Service Bay: VW Tiguan 2.0 TDI • Electronic Diagnostics: Honda CR-V 2.2 i-DTEC.

MAY 2023

Understanding AdBlue & SCR Systems • Project Ford Mondeo 2.0 TDCi, Pt4 • Skoda Fabia 1.4 TDI Oil Pump Chain Failure • Swapping Front Control Arms • Buying + Owning: Porsche Cayenne 2011-2018 • Service Bay: Jaguar XKR 5.0 • Electronic Diagnostics: Citroën DS3 1.6 THP.

APRIL 2023

Getting to grips with Grease • Project Ford Mondeo 2.0 TDCi, Pt3 • Project Fiat Panda 100HP, Pt6 • Ford Bonnet Lock Fix • Buying + Owning: VW Golf Mk6 2009-2016 • Product Test: 21 Car Shampoos • Service Bay: Jeep Wrangler JK 3.8 V6 • Electronic Diagnostics: Land Rover Discovery 4 3.0 TDV6.

BINDERS

£10.95 (UK)

plus postage

higher rates for overseas

holds **12** issues

Visit: shop.kelsey.co.uk/product/car-mechanics-binder

36294

PAY Monthly

- Spread the cost over 12, 24, 36, 48 or 60 months
- Any mix of products over £300
- 19.9% APR

5 MINUTE APPLICATION

Machine Mart

Britain's Tools & Machinery specialist!

www.machinemart.co.uk

FRIENDLY STORES NATIONWIDE

FREE 500 PAGE CATALOGUE
GET YOUR FREE COPY!

- IN-STORE
- ONLINE • PHONE

0844 880 1265

GARAGES/WORKSHOPS

- Extra tough triple layer cover
- Heavy duty steel tubing
- Ratchet tight tensioning

BRIGHT WHITE INTERIOR

ZIP CLOSE DOOR

CIG81220

LENGTH UP TO 40'

KEEPS THE WEATHER OUT!

FROM £249.00 exc.VAT £298.80 inc.VAT

Model	Dims	Order Code	exc.VAT	WAS inc.VAT	inc.VAT
CIG81212	3.6 x 3.6 x 2.5m	140613584	£249.00		£298.80
CIG81015	4.5 x 3 x 2.4m	140613570	£279.00		£334.80
CIG81216	4.9 x 3.7 x 2.5m	140613574	£319.00	£394.80	£382.80
CIG81020	6.1 x 3 x 2.4m	140613572	£349.00		£418.80
CIG81220	6.1 x 3.7 x 2.5m	140613576	£389.00	£478.80	£466.80
CIG81224	7.3 x 3.7 x 2.5m	140613578	£489.00	£598.80	£586.80
CIG1432	9.7x4.3x3.65m	140613594	£1099.00		£1318.80
CIG1640	12x4.9x4.3m	140613596	£2599.00		£3118.80

TURBO AIR COMPRESSORS

- Superb range ideal for DIY, hobby & semi-professional use

TIGER 8/260

PRICE CUT NOW FROM £107.99 exc.VAT £129.59 inc.VAT WAS £131.98 inc.VAT

‡ WAS £131.98 inc.VAT

Model	Motor	CFM	Tank	Order Code	exc.VAT	inc.VAT
8/260‡	2HP	7	24ltr	000119490	£107.99	£129.59
11/550	2.5HP	9.3	50ltr	000119505	£169.98	£203.98
16/550	3HP	14.5	50L	000119510	£239.00	£286.80
16/1050	3HP	14.5	100ltr	000119515	£299.00	£358.80

ALUMINIUM RACING JACKS

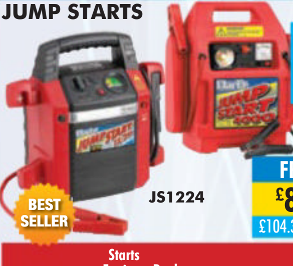
PRICE CUT NOW FROM £104.99 exc.VAT £125.99 inc.VAT WAS £131.98 inc.VAT

- Quick lift
- Non-marking nylon wheels

CTJ1250AB

Model	Lifting Cap.	Order Code	exc.VAT	WAS exc.VAT	inc.VAT
CTJ1500QL	1.5T	020112633	£104.99	£131.98	£125.99
CTJ1250AC	1.25T	020111818	£129.98	£167.98	£155.98
CTJ2500QLGB	2.5T	020112803	£169.98	-	£203.98
CTJ1800AB	1.8T	020113202	£194.99	£239.98	£233.99

JUMP STARTS



EXTRA LONG 1M LEADS

JS4000

JS1224

BEST SELLER

FROM £86.99 exc.VAT £104.39 inc.VAT

Model	Starts Engines up to	Peak Amps	Order Code	exc.VAT	inc.VAT
JS1100	3L	1100	010310017	£86.99	£104.39
JS1224LiN	6L	1200	010318905	£144.99	£173.99
JS4000	6L	2200	010311030	£164.99	£197.99
JS12/24	6L	2000	010311224	£179.98	£215.98

PRO TOOL CHESTS & CABINETS

SEE ONLINE FOR OUR HUGE RANGE OF TOOL STORAGE

£154.99 exc.VAT £185.99 inc.VAT 2

£279.00 exc.VAT £334.80 inc.VAT 3

1
BALL BEARING

	Model	Description	Order Code	exc.VAT	inc.VAT
1	CBB203C	3 Dr step up	070118012	£86.99	£104.39
2	CBB209C	9 Dr Chest	070118032	£154.99	£185.99
3	CBB217C	7 Dr Cabinet	070118057	£279.00	£334.80

1 TONNE FOLDING WORKSHOP CRANE

£219.98 exc.VAT £263.98 inc.VAT

- Folding and fixed frames available
- Robust, rugged construction
- Overload safety valve

Fully tested to proof load

CFC100
020110142

ELECTRIC HEATERS

FROM £64.99 exc.VAT £77.99 inc.VAT

BEST SELLER

DEVIL 7003 DEVIL 6003

Model	Voltage	Heat Output	Order Code	exc.VAT	inc.VAT
Devil 6003	230V	1.5-3kW	010416003	£64.99	£77.99
Devil 7003	230V	1.5-3kW	010415450	£64.99	£77.99
Devil 7005	400V	2.5-5kW	010415452	£89.98	£107.98
Devil 6009	400V	4.5-9kW	010416009	£119.98	£143.98
Devil 7009	400V	4.5-9kW	010415454	£147.99	£177.59
Devil 6015	400V	5-10-15kW	010416015	£179.98	£215.98
Devil 7015	400V	15kW	010415456	£219.98	£263.98

ENGINE STANDS

CES680F

Fully tested to proof load

FROM £69.98 exc.VAT £83.98 inc.VAT

- Rotates through 360°

*Folds for storage

Model	Capacity	Order Code	exc.VAT	inc.VAT
CES340	340kg	020110124	£69.98	£83.98
CES450	450kg	020110121	£79.98	£95.98
CES560	560kg	020110123	£104.99	£125.99
CES680F*	680kg	020110122	£135.99	£163.19

GENERATORS

FROM £219.00 exc.VAT £262.80 inc.VAT

ALSO DIESEL GENERATORS UP TO 125KVA

PG3800ADV

Model	Volts	KVA	HP	Order Code	exc.VAT	inc.VAT
PG2500A	230	2.2	5.6	010617850	£219.00	£262.80
PG3800A	230	3	5.6	010617852	£239.00	£286.80
PG3800ADV	230/110	3	5.6	010617854	£279.00	£334.80
PG6500ADVES	230/110	5.5	9.7	010617856	£529.00	£634.80
PG9000ADVES‡	230/110	5.5	16	010617860	£949.00	£1138.80

‡ WAS £1174.80 inc.VAT Honda engine models available

INVERTER GENERATORS

PRICE CUT NOW FROM £209.00 exc.VAT £250.80 inc.VAT WAS £262.80 inc.VAT

2.2 KVA

IG2200A

Model	Max Output	Weight KG	Order Code	exc.VAT	inc.VAT
IG950D‡	800W	9.3	010617107	£209.00	£250.80
IG1700F	1700W	22	010617095	£249.00	£298.80
IG1200D	1100W	12.4	010617112	£279.00	£334.80
IG3500AF	3400W	35	010617125	£359.00	£430.80
IG2200A*	2200W	26.6	010617121	£419.00	£502.80
IG4000●	3800W	-	010617130	£899.00	£1078.80

‡WAS £262.80 inc.VAT *WAS £514.80 inc.VAT ●WAS £1162.80 inc.VAT

DRILL PRESSES

CDP102B

- Range of precision bench & floor presses for enthusiast, engineering & industrial applications

PRICE CUT NOW FROM £94.99 exc.VAT £113.99 inc.VAT WAS £119.94 inc.VAT

B = Bench mounted F = Floor standing

Model	Motor (W) Speeds	Order Code	exc.VAT	WAS inc.VAT	inc.VAT
CDP5EB	350 / 5	060712030	£94.99	£119.94	£113.99
CDP5RB	350 / 5	060710035	£94.99	£119.94	£113.99
CDP102B	350 / 5	060715512	£109.98	£139.14	£131.98
CDP152B	450 / 12	060715522	£179.00	£250.80	£214.80
CDP452B	550 / 16	060715575	£299.00	-	£358.80
CDP352F	550 / 16	060715562	£319.00	£394.80	£382.80
CDP502F	1100 / 12	060715592	£689.00	£838.80	£826.80

MICRO JUMPSTARTS

FROM £49.98 exc.VAT £59.98 inc.VAT

- Compact enough to fit in a vehicle glove box

JSM1000

‡ WHAT CAR BEST JUMP STARTER 2024

* AUTO EXPRESS CHOICE JUMP STARTER 2024

Model	Start Boost	Peak Boost	Order Code	exc.VAT	inc.VAT
JSM600	300A	600A	010319020	£49.98	£59.98
JSM1000*	500A	1000A	010319025	£59.98	£71.98
JSM1200‡	600A	1200A	010319030	£69.98	£83.98

MIG WELDERS

Quality machines from Britain's leading supplier

See online for included accessories

IMIG100NG

SEE FULL RANGE OF ARC ACTIVATED HEADSHIELDS IN-STORE/ONLINE

FROM £134.99 exc.VAT £161.99 inc.VAT

Model	Min/Max Amps	Order Code	exc.VAT	inc.VAT
MIG103NG	35-90	010115615	£134.99	£161.99
IMIG100NG	40-100	010115610	£149.98	£179.98

MODULAR STORAGE SYSTEMS

10 PACKAGES IN THE RANGE

CORNER UNITS IN STOCK

- CREATE THE PERFECT FITTED GARAGE/WORKSHOP
- HEAVY DUTY, PROFESSIONAL PACKAGES
- ALL UNITS ALSO AVAILABLE SINGLY FOR CUSTOM BUILD

PRICE CUT NOW FROM ONLY £1099.00 exc.VAT £1318.80 inc.VAT WAS £1318.80 inc.VAT

SAVE UP TO £479 compared to individual prices

A CHOICE OF STAINLESS STEEL OR WOODEN WORKTOPS

BATTERY CHARGERS /ENGINE STARTERS

- Ammeter
- Multi-position charge regulator
- Overload protection on charging cycle

FROM £89.98 exc.VAT £107.98 inc.VAT

BC210C

Model	Max Amps Charge/ Boost	Order Code	exc.VAT	inc.VAT
BC125	20/120	010310125	£89.98	£107.98
BC190	38/180	010310190	£104.99	£125.99
BC210C	25/200	010311130	£149.98	£179.98
WBC180	35/180	010311500	£159.98	£191.98
WBC240	45/240	010311505	£184.99	£221.99
WBC400	60/350	010311515	£219.00	£262.80
BC520P	50/510	010311082	£259.00	£310.80

2 & 3 TONNE TROLLEY JACKS

FROM £42.99 exc.VAT £51.59 inc.VAT

JACKS ALSO IN STOCK UP TO 5 TONNE

CTJ2250LP

Model	Type	Tonne	Order Code	exc.VAT	inc.VAT
CTJ2L	Long	2	020110275	£42.99	£51.59
CTJ2250LP*	Low Profile	2.25	020113070	£49.98	£59.98
CTJ3000GB	Pro Garage	3	020113032	£109.98	£131.98
CTJ3000QLC	Pro Garage Quick Lift	3	020113210	£114.99	£137.99
CTJ2QLP#	Low Quick Lift	2	020111820	£152.99	£183.59

* CTJ2250LP has a 2.25 tonne capacity, has a low entry of only 80mm and includes 2 sockets ‡ WAS £191.98 inc.VAT

TURBO FAN GAS HEATERS

Offering low cost, efficient heating

230& 110 VOLT

FROM £89.98 exc.VAT £107.98 inc.VAT

PROPANE GAS FIRED

LITTLE DEVIL II

Model	Max. Output kW	Order Code	exc.VAT	inc.VAT
Little Devil II	10.3	010416020	£89.98	£107.98
Devil 700	15	010410182	£114.99	£137.99
Devil 900	24.9	010410186	£159.98	£191.98
Devil 1600	36.6	010410190	£189.98	£227.98
Devil 2100	49.8	010410194	£249.00	£298.80
Devil 4000	131	010414000	£479.00	£574.80

18V ½" IMPACT WRENCH

- 3 forward and reverse gears

BRUSHLESS

450NM

Powered by Li-Ion

2x2AH

£99.98 exc.VAT £119.98 inc.VAT

‡ Auto Express Best Buy 2024

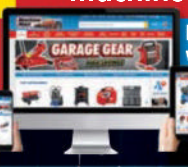
Model	Desc	Batteries	Order Code	exc.VAT	inc.VAT
CCIW160	Cordless	2X 2AH LI-ION	060210658	£99.98	£119.98
CIR 184LIP‡	Cordless	2X 4AH LI-ION	060210619	£144.99	£173.99

36294

EASY TO USE WEBSITE

NOW OVER 21,000 PRODUCTS ONLINE!

machinemart.co.uk



For 15,000 hard to find items visit the Xtra section

OUR BRAND NEW APP IS HERE

ALL YOUR OFFERS IN ONE PLACE!

GET IT ON Google Play

Download on the App Store

SHOP ONLINE

HOT WASHER

Ideal for effective cleaning with a hot jet of up to 80°C

HARRY 2
050412181

Clarke
HARRY 2
HOT WASH

145 Bar
2100 PSI

PRICE CUT
£579.00 exc.VAT
£694.80 inc.VAT
WAS £706.80 inc.VAT

INC. CONTAINER FOR DETERGENT

PRO SANDER/ POLISHER

£64.99 exc.VAT
£77.99 inc.VAT

- Dual action combines rotary & orbital motions to produce an excellent polished finish

150MM PAD DIA.

CP150
060312101

ANGLE GRINDERS

FROM
£29.98 exc.VAT
£35.98 inc.VAT

‡ WAS £44.39 inc.VAT
◆ WAS £83.98 inc.VAT

Model	Disc (mm)	Motor	Order Code	exc.VAT	inc.VAT
CAG800B	115	800W	060512110	£29.98	£35.98
CON1150‡	115	1150W	060514015	£34.99	£41.99
CAG2350C◆	230	2350W	060512030	£64.99	£77.99

ELECTRIC PRESSURE WASHERS

Makes easy work for washing vehicles, patios, stonework, etc.

- JET7500, JET8500 & JET9500B include hose reel

180 Bar
2610 PSI

JET8500

FROM
£59.98 exc.VAT
£71.98 inc.VAT

Model	Motor W	Max. Press.	Order Code	exc.VAT	inc.VAT
JS1850	1400	1523psi	050416005	£59.98	£382.80
JS1950	1600	2030psi	050416011	£94.99	£113.99
Jet7500	1600	2030psi	050413510	£149.98	£179.98

CAR RAMPS

- Lift cars safely and quickly
- Tough angled steel construction

UK MADE

FROM
£39.98 exc.VAT
£47.98 inc.VAT
PER PAIR

Model	Capacity	Order Code	exc.VAT	inc.VAT
CR2	2000kg	051710149	£39.98	£47.98
CRW25	2500kg	051710153	£47.99	£57.59

WORKSHOP AIR TOOLS

CAT131
000310131

PRICE CUT
£56.99 exc.VAT
£68.39 inc.VAT
WAS £71.98 inc.VAT

£26.99 exc.VAT
£32.39 inc.VAT

BEST SELLER

PGF14
000510090

DEHUMIDIFIERS

REMOVE DAMP

IDH50L

FROM
£94.99 exc.VAT
£113.99 inc.VAT

DH30L

Models	Extraction Rate	Order Code	exc.VAT	inc.VAT
DH10L	10L/day	010410687	£94.99	£113.99
DH20L	20L/day	010410683	£149.99	£179.99
DH30L	30L/day	010410685	£169.99	£203.99
IDH50L	50L/day	010410611	£469.00	£562.80

FAN HEATERS

FROM
£29.98 exc.VAT
£35.98 inc.VAT

2.8KW

NEW

2850
2.8KW

2800PTC-B

Models	Max. Output	Order Code	exc.VAT	inc.VAT
DEVIL 2000PTC-B	2kW	010415591	£29.98	£35.98
DEVIL 2850	2.8kW	010415801	£42.99	£51.59
DEVIL 2800PTC-B	2.8kW	010415602	£49.98	£59.98

DIESEL FIRED SPACE HEATERS

Ideal for fast efficient heating

- Extra-long run fuel tanks – up to 53 litres
- Variable heat output with thermostat control

BEST SELLER

FROM
£179.00 exc.VAT
£214.80 inc.VAT

‡ WAS £274.80 inc.VAT

XR80

Model	MAX output	Order Code	exc.VAT	inc.VAT
XR35	10kW	010410197	£179.00	£214.80
XR60B‡	14.7kW	010411103	£219.00	£262.80
XR110	29.3kW	010411006	£319.00	£382.80
XR80	20.5kW	010411004	£279.00	£334.80
XR160	46.9kW	010411008	£389.00	£466.80
XR210	61.5kW	010410210	£449.00	£538.80

HEAVY DUTY LONG REACH JACKS

FROM
£269.00 exc.VAT
£322.80 inc.VAT

CTJ2GLS

Model	Tonnes	Order Code	exc.VAT	inc.VAT
CTJ2GLS	2	020111026	£269.00	£322.80
CTJ3GLS‡	3	020113085	£349.00	£418.80
CTJ5GLS◆	5	020113090	£459.00	£550.80
CTJ10GLS	10	020113095	£639.00	£766.80

‡ WAS £430.80 inc.VAT ◆ WAS £574.80 inc.VAT

HYDRAULIC PRESSES

PROFESSIONAL QUALITY

FROM
£169.98 exc.VAT
£203.98 inc.VAT

Built for tough daily use in automotive/industrial workshops

* Available with/without 7 pce pin, bracket & pressing plate kit # Economy model

CSA30FP

‡ WAS £233.99 inc.VAT

Model	Order Code	exc.VAT	inc.VAT
CSA4B-4 tonne bench#	020413025	£169.98	£203.98
CSA10EP 10 tonne bench* ‡	020414025	£189.98	£227.98
CSA12F 12 tonne floor*#	020413020	£379.00	£454.80
CSA20FBT 20 tonne floor	020414058	£489.00	£586.80
CSA30FPB 30 tonne floor	020415201	£959.00	£1150.80
CSA50FPB 50 tonne floor	020415203	£1699.00	£2038.80

MMA & ARC/TIG INVERTER WELDERS

FROM
£104.99 exc.VAT
£125.99 inc.VAT

AT165

MMA200A

Model	Min/Max Output Current	Electrode Dia. (mm)	Order Code	exc.VAT	inc.VAT
MMA140A	20A-140A	1.6-3.2	010112161	£104.99	£125.99
MMA200A	20A-200A	1.6-3.2	010112163	£139.98	£167.98
AT165	10A-160A	2.5/3.2/4.0	010112149	£219.98	£263.98

INTELLIGENT BATTERY CHARGER/ MAINTAINERS

FROM
£39.98 exc.VAT
£47.98 inc.VAT

IBC20

Model	Tank Volume	Flow Rate Req.	Order Code	exc.VAT	inc.VAT
IBC7	12/24V	7A	010317008	£39.98	£47.98
IBC15	12V	15A	010317010	£49.98	£59.98
IBC20	12/24V	20A	010317012	£62.99	£75.59
IBC25	12/24V	25A	010317013	£79.98	£95.98
IBC40	12/24V	40A	010317014	£99.98	£119.98

PETROL & DIESEL PRESSURE WASHERS

PLS265B

FROM
£269.00 exc.VAT
£322.80 inc.VAT

Honda & Diesel engine models in stock

‡ WAS £814.80 inc.VAT

Model	Pressure BAR/Psi	Motor HP	Order Code	exc.VAT	inc.VAT
Tiger1800B	110/1595	3	050412202	£269.00	£322.80
Tiger2600B	180/2610	4	050412207	£379.00	£454.80
Tiger3000B	200/2900	6.5	050412212	£399.00	£478.80
PLS195B	180/2640	5.5	050411362	£479.00	£574.80
PLS220‡	230/3335	9	050410347	£669.00	£802.80
PLS265B	225/3263	13	050411367	£749.00	£898.80
PLS360	248/3600	13	050410375	£998.00	£1197.60
DLS200AL	200/2900	8.5	050410218	£2499.00	£2998.80

1 TONNE STRUT SPRING COMPRESSOR

- Hydraulically powered, foot control operated device
- Adjustable spring retainers
- Springs up to 400mm diameter & 520mm in length
- Tough steel safety guard

£189.98 exc.VAT
£227.98 inc.VAT

SSC1000G
020411030

SANDBLASTERS

- Heavy duty steel construction sandblasters for the quick removal of surface rust, paint, dirt/grease etc.

FROM
£169.00 exc.VAT
£202.80 inc.VAT

INCLUDES SANDBLASTING GUN, DELIVERY HOSE, 4 CERAMIC NOZZLES AND SAFETY HOOD

Model	Tank Volume	Flow Rate Req.	Order Code	exc.VAT	inc.VAT
CPSB100B	32 litre	6-25 cfm	000510133	£169.00	£202.80
CPSB200B	63 litre	6-25 cfm	000510134	£209.00	£250.80

SOCKET SETS & WRENCHES

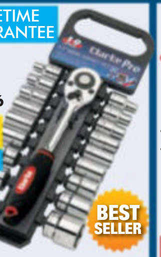
LIFETIME GUARANTEE

Top quality chrome vanadium steel

- 18 Sockets 8-32mm
- Reversible ratchet
- Comfort grip handle

PRO360
040810766

£29.98 exc.VAT
£35.98 inc.VAT



HUGE RANGE OF RATCHETS, SPANNERS AND SOCKET SETS

BEST SELLER

Digital electronic torque wrench

- 1/2" drive size
- Chrome plated
- Soft grip handle

PRO237
040218237

£89.98 exc.VAT
£107.98 inc.VAT

INDUSTRIAL AIR COMPRESSORS

UK BUILT

FROM
£589.00 exc.VAT
£706.80 inc.VAT

- Top quality belt driven air compressors for industrial & commercial users inc; garages, factories, workshops and farms. 10 bar/150psi max working pressure

†V-Twin *230V

XEV16/100

Model	Air. disp	Air RCVR	Order Code	exc.VAT	inc.VAT
XEV16/100 (OL)‡*	14cfm	100ltr	000112270	£589.00	£706.80
XEV16/150 (OL)‡*	14cfm	150ltr	000112272	£659.00	£790.80
XEV16/200(OL)‡*	14cfm	200ltr	000112274	£719.00	£862.80
XEV16/150(400V)‡	14cfm	150ltr	000112276	£699.00	£838.80
XE37/270 (OL)*	36cfm	270ltr	000112370	£1459.00	£1750.80

EASY WAYS TO BUY...

CALL & COLLECT AT STORES TODAY

CLICK & COLLECT OVER 10,500 LOCATIONS

VISIT STORES NATIONWIDE

CALL 0115 956 5555

BROWSE machinemart.co.uk

BARNSLEY, S71 1HA	01226 732297	DEAL KENT, CT14 6BQ	01304 373434	LIVERPOOL, L3 5NF	0151 709 4484	PORTSMOUTH, P03 5EF	02392 654777
B'HAM GT. BARR, B43 6NR	0121 358 7977	DERBY, DE1 2ED	01332 290931	LONDON CATFORD, SE6 3ND	0208 695 5684	PRESTON, PR2 6BU	01772 703263
B'HAM HAY MILLS, B25 8DA	0121 771 3433	DONCASTER, DN2 4NY	01302 245999	LONDON EDM'TON, N18 020	0208 803 0861	SHEFFIELD, S2 4HJ	0114 258 0831
BOLTON, BL3 6BD	01204 365799	DUNDEE, DD1 3ET	01382 225140	LONDON LEYTON, E10 7EB	0208 558 8284	SIDCUP, DA15 9LU	0208 3042069
BRADFORD, BD1 3BN	01274 390962	EDINBURGH, EH8 7BR	0131 659 5919	LUTON, LU4 8JS	01582 728063	SOUTHAMPTON, SO17 3SP	02380 557788
BRISTOL, BS5 9JJ	0117 935 1060	EXETER, EX2 8QG	01392 256744	MAIDSTONE, ME15 6HE	01622 769572	SOUTHEND, SS9 3JJ	01702 483742
BURTON, DE14 3QZ	01283 564708	GATESHEAD, NE8 4XA	0191 493 2520	MC CENTRAL, M8 8DU	0161 241 1851	STOKE-ON-TRENT, ST1 5EH	01782 287321
CAMBRIDGE, CB4 3HL	01223 322675	GLASGOW, G4 9EJ	0141 332 9231	MC OPENSHAW, M11 1AA	0161 223 8376	SUNDERLAND, SR2 9QF	0191 510 8773
CARDIFF, CF24 3DN	02920 465424	GLOUCESTER, GL1 4HY	01452 417948	MANSFIELD, NG19 7AR	01623 622160	SWANSEA, SA7 9AG	01792 792969
CARLISLE, CA1 2LG	01228 591666	GRIMSBY, DN32 9BD	01472 354435	MIDDLESBROUGH, TS17 6BZ	01642 677881	SWINDON, SN1 3AW	01793 491717
CHELTENHAM, GL52 2EH	01242 514402	HULL, HU9 1EG	01482 223161	NORWICH, NR2 4LZ	01603 766402	TWICKENHAM, TW1 4AW	0208 892 9117
CHESTER, CH1 3EY	01244 311258	ILFORD, IG2 7HU	0208 518 4286	NORTHAMPTON, NN5 5JW	01604 267840	WARRINGTON, WA2 8JP	01925 630937
COLCHESTER, CO1 1RE	01206 762831	IPSWICH, IP1 1UZ	01473 221253	NOTTINGHAM, NG1 1GN	0115 956 1811	WIGAN, WN5 9AU	01942 323785
COVENTRY, CV1 1HT	02476 224227	LEEDS, LS4 2AS	0113 231 0400	PETERBOROUGH, PE1 2PE	01733 311770	WOLVERHAMPTON, WV4 6EL	01902 494186
CROYDON, CR2 6EU	0208 763 0640	LEICESTER, LE4 6PN	0116 261 0688	PLYMOUTH, PL4 9HY	01752 254050	WORCESTER, WR1 1JZ	01905 723451
DARLINGTON, DL1 1RB	01325 380841	LINCOLN, LN5 8HG	01522 543036	POOLE, BH14 9HT	01202 717913		

Calls to the catalogue request number cost 7p per minute plus your telephone company's network access charge. Calls may be monitored. All prices correct at time of going to press. We reserve the right to change products and prices. All products subject to availability, E&OE.

Focus Mk3

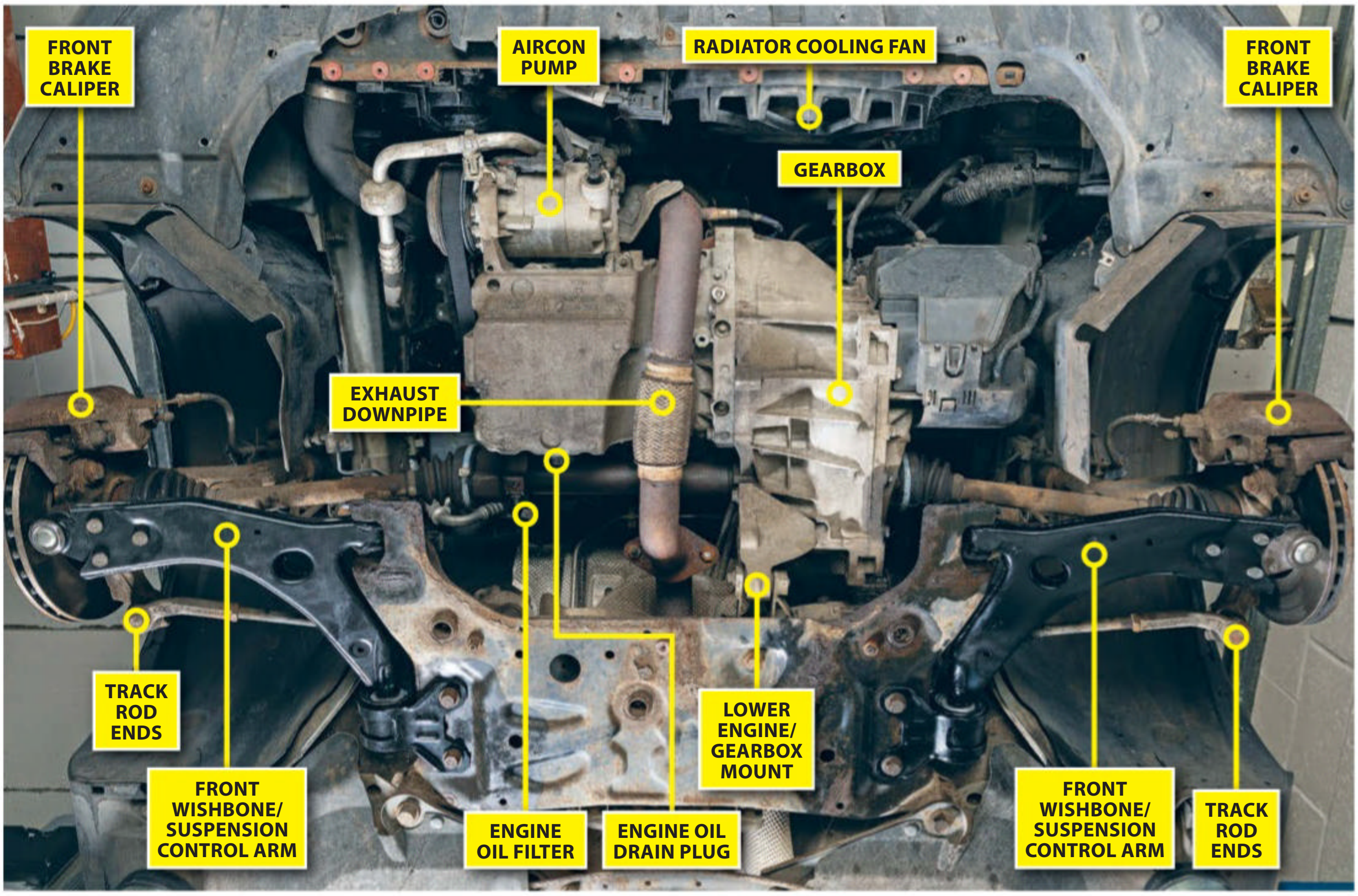
Part TWO: James Burr changes air and cabin filters, plus shows us the major components of the Focus EcoBoost.

An air filter is the only defence from potentially harmful particulates entering your engine. As your engine (or in our case the turbocharger attached to the engine) sucks in air to combine with fuel in the cylinders, the air filter has the crucial task of catching any dust and dirt particles. What's also important when it comes to air filters is the question of airflow. A dirty air filter – no matter the type – hugely decreases the performance of your vehicle. Even a partially blocked filter will restrict the volume of air that the engine is capable of pulling into the cylinders. Less air in the cylinders means less oxygen so less fuel can be burnt, resulting in a drop in engine power.

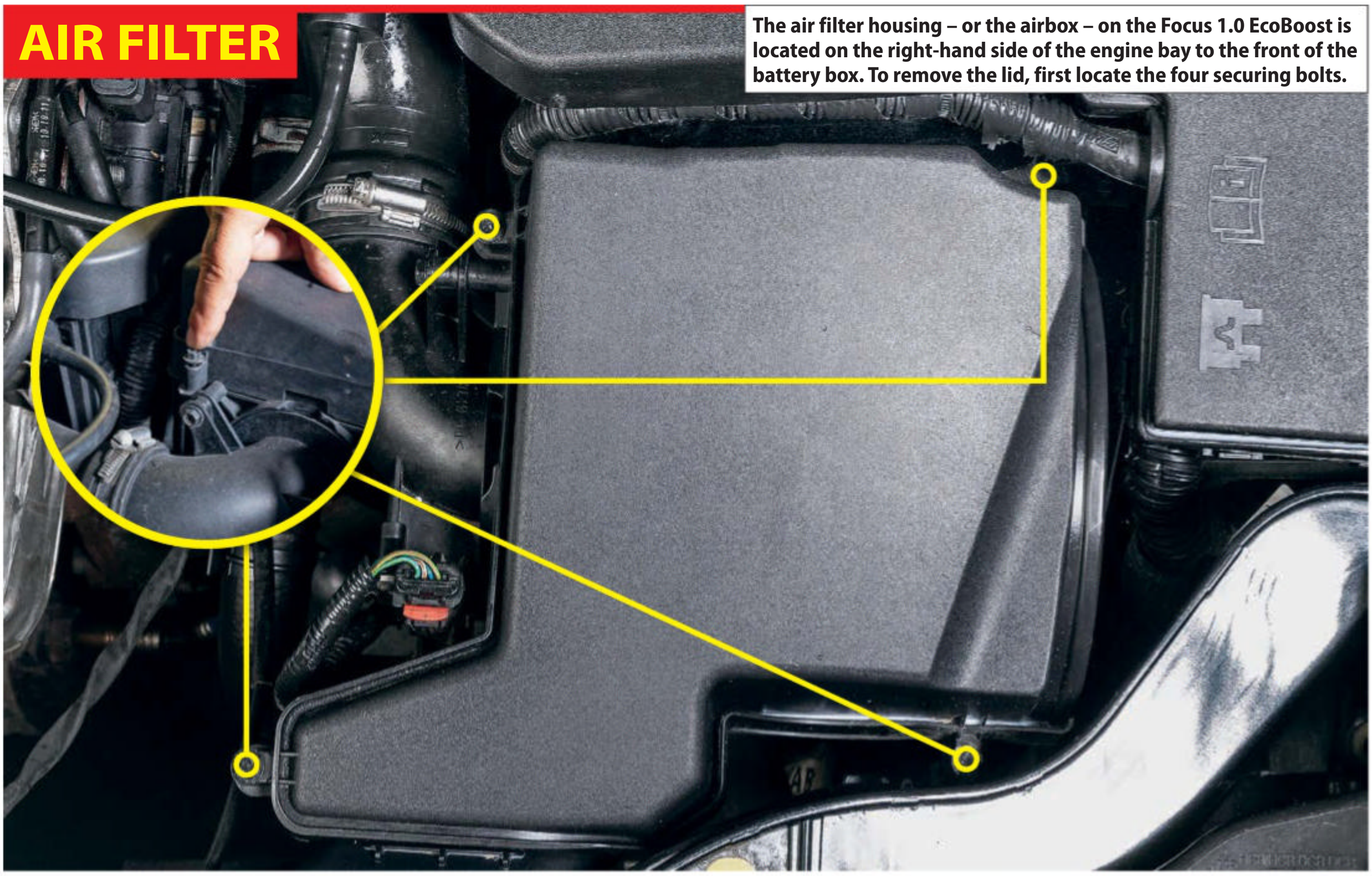
The vast majority of standard cars employ a panel or cartridge filter element located inside an airbox designed to protect from the heat of the engine bay. Standard filters are typically made of pleated paper, which is ideal for filtration of tiny particles and makes them a relatively cheap, consumable part. What's more, they're typically easy to replace and with most vehicles should be changed every year or 10-12,000 miles.

In the case of our Focus 1.0 EcoBoost, the service interval is every three years or every 36,000 miles… although we'd take that as 'at least every three years' and we wouldn't wait that long.

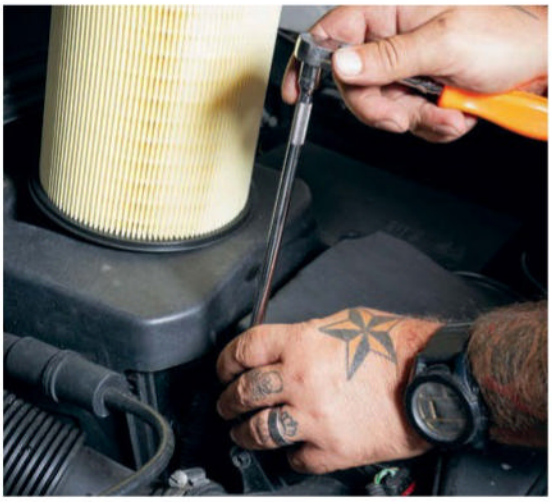
That said, while we'd always recommend replacing your air filter a little more regularly than every three years, they are extremely easy to remove and inspect in the interim. Paper filters aren't designed to be reusable as such, but minor dust and debris can often be gently blown out with a little compressed air every few months, just to keep them in order until it's time for a replacement.


FRONT BRAKE CALIPER
AIRCON PUMP
RADIATOR COOLING FAN
FRONT BRAKE CALIPER
GEARBOX
EXHAUST DOWNPIPE
TRACK ROD ENDS
FRONT WISHBONE/ SUSPENSION CONTROL ARM
ENGINE OIL FILTER
ENGINE OIL DRAIN PLUG
LOWER ENGINE/ GEARBOX MOUNT
FRONT WISHBONE/ SUSPENSION CONTROL ARM
TRACK ROD ENDS

AIR FILTER

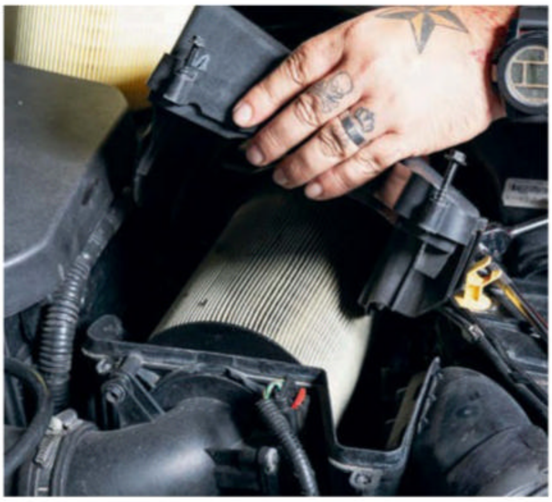


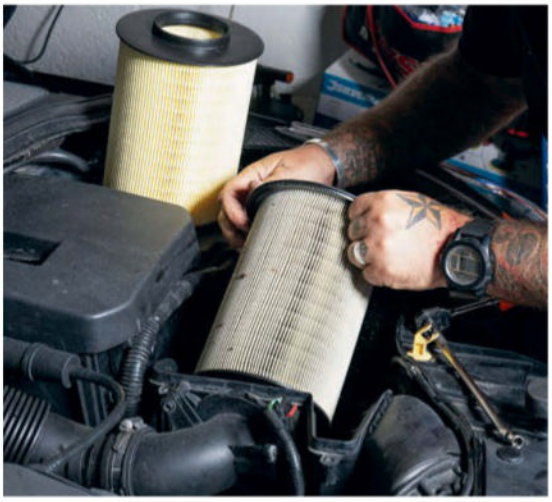
The air filter housing – or the airbox – on the Focus 1.0 EcoBoost is located on the right-hand side of the engine bay to the front of the battery box. To remove the lid, first locate the four securing bolts.



1 ◀ Use an 8mm socket with a short extension bar to unscrew the four bolts. These do not need to be taken out all the way.

2 ▶ Carefully prise up the airbox lid, starting with the left-hand side, to remove fully. Set the lid to one side.



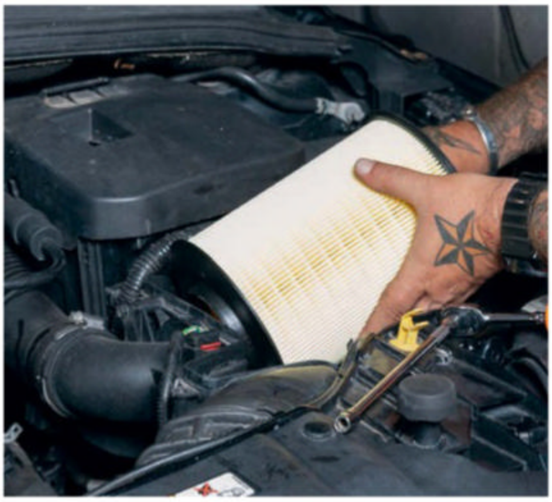


3 ◀ Now remove the old air filter by prising upwards from the right-hand side and pulling away from the left-hand flange.

TYPICAL COST

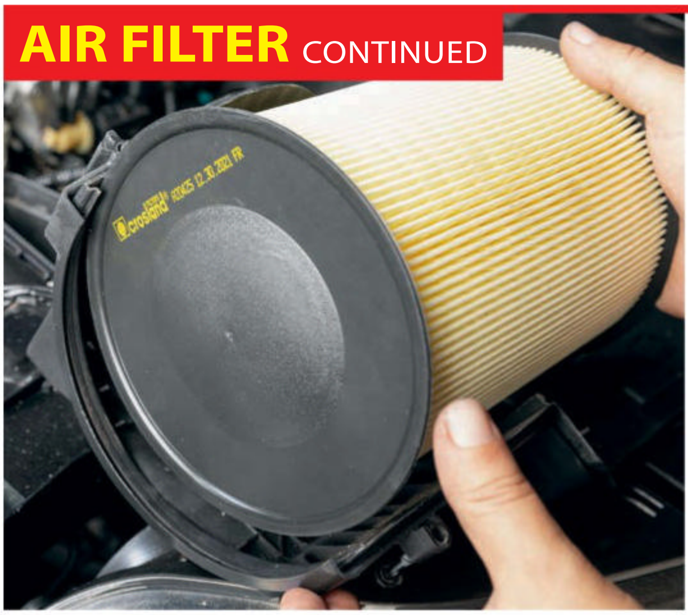
▶ febi 38923 Air Filter **£8.71**

4 ▶ Clean/vacuum any loose debris from the airbox and install the new filter ensuring it fits snugly over the AFM flange.

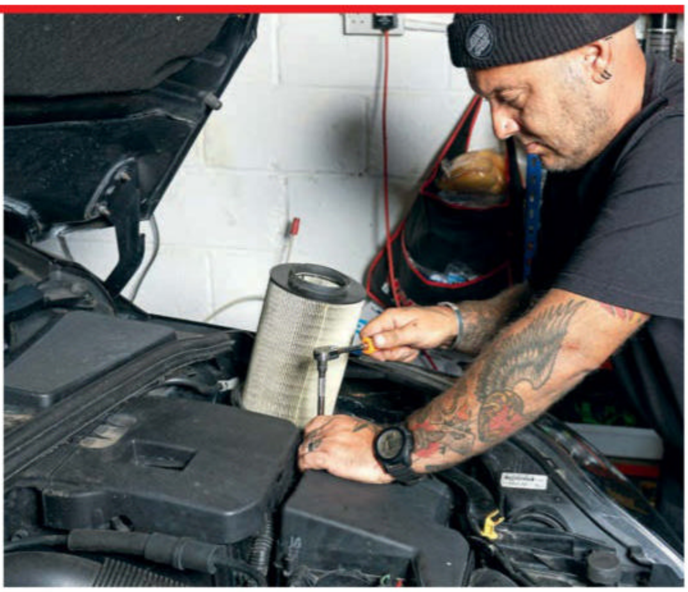


⇨

AIR FILTER CONTINUED



5 **Note that the flat side of your filter is part of the airbox and lid setup and designed to form the end of the sealed unit. When fitting your filter locate the plastic end disc into the groove on the lower airbox.**



6 **Refit your airbox lid being sure to locate the plastic end disc into the corresponding groove. Hold the lid down firmly while nipping up all four fasteners. Ford specify no torque settings for these bolts, they only need to hold the lid firmly in place, be careful not to over-tighten.**

EASY PERFORMANCE UPGRADES

▶ Performance air filters are all about increasing airflow for a small power gain. Performance panel or cartridge filters are a direct replacement for your original filter, the only difference is that the filter element will be constructed from a freer-flowing material than the OEM paper filters, such as foam or cotton gauze.

After the air has passed through your filter the volume is measured by the vehicle's Air Flow Meter. This important sensor allows the vehicle ECU to calculate how much fuel needs to be combined with that specific volume of air for the optimum power output. This is the case with any modern air filter but, as a performance filter is designed to flow more air than standard, more fuel can be burned. The result is a slightly bigger explosion in the cylinders producing a little more power, and often slightly more of an induction roar.

The other huge advantage of performance filters is that they're generally designed to be washable and reusable. This means that, while they're a little more expensive to buy, a filter from one of the leading brands should easily last the lifetime of the vehicle.

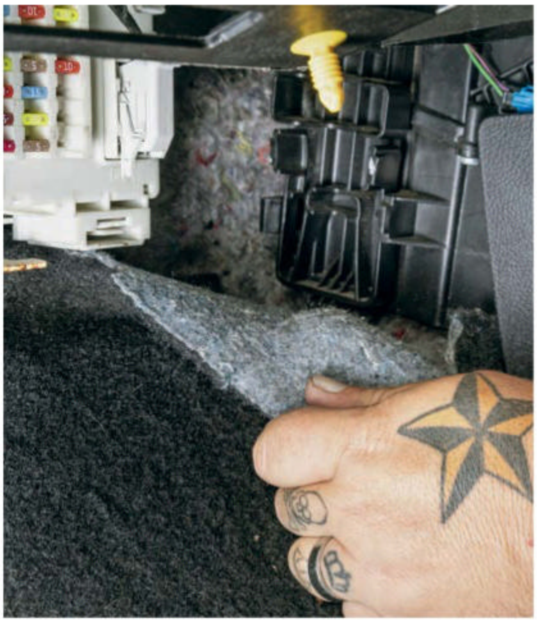
CABIN FILTER

The air filter ensures that your engine is breathing effectively… but what about you? Well, keeping the air you're breathing clean comes down to your cabin filter (otherwise known as the pollen filter). This pleated paper filter is the main apparatus used to remove pollutants entering your car interior. These little nasties include dust, pollen and even exhaust fumes, all of which can be detrimental to your respiratory health. The cabin filter is also essential for blocking odours and other airborne material, and should be changed at least every two years – ideally every year if you happen to live in a built-up area.

The issue is that, on many vehicles, these can be fiddly to get to. This ensures that labour charges that are often more than the filter itself. It's also a task that's easily forgotten, or simply ignored, during routine service intervals. The truth is that while engine oil and air filters get all the attention, the humble cabin filter is often overlooked, both by garages and home mechanics. It's simply not seen as the priority that it really is.

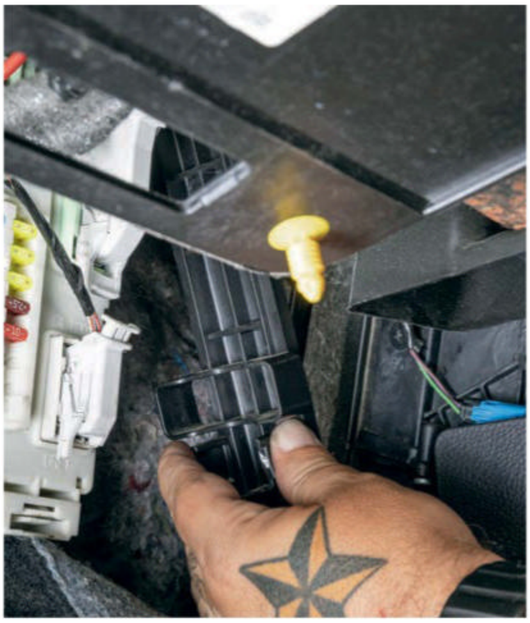
The good news is that, on the Mk3 Focus in particular, changing the cabin filter is a quick, simple and ultimately cheap job. More so than on a whole host of other cars. It's not located under the bonnet and requireS removal of all sorts of trim. And, unlike most compact cars, you don't even have to remove the glovebox for access.

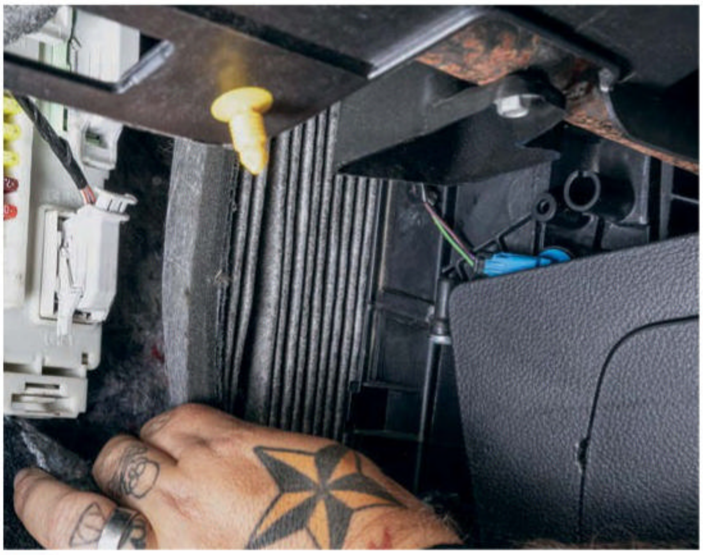
For those that have just invested in a Focus, it's probably one of the most important places to start. After all, no matter the history, you don't really know how and where it's been used by the previous owner, or what you happen to be breathing in. Many Focus models – particularly our 1.0 EcoBoost – make ideal city cars, but all cities have a huge concentration of harmful pollutants. So, we'd always recommend making this the number one job on your list.



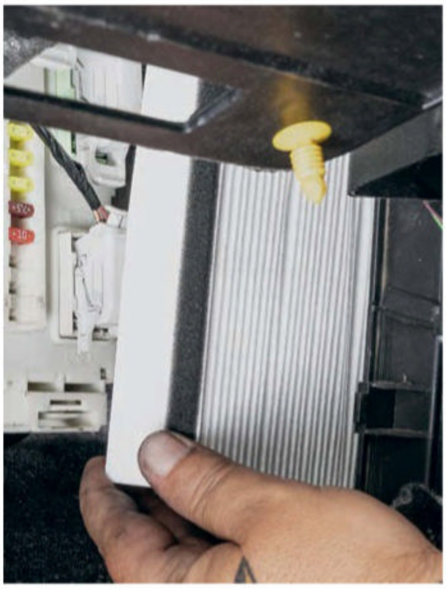
1 ◀ On every Mk3 Focus the cabin filter housing is located on the right-hand side of the passenger footwell, next to the fusebox. For models with a glovebox undertray fitted, remove this by compressing the clips and pulling away, and then disconnecting the air temperature sensor plug. Pull back the carpet to reveal the housing. Note: While it does improve access, removal of the glovebox isn't necessary. We have ours removed purely for photography purposes.

2 ▶ From the factory there is a small screw at the bottom of the cover, in the vast majority of cases this will have been discarded on previous services. Remove the cover by squeezing together the bottom tabs.

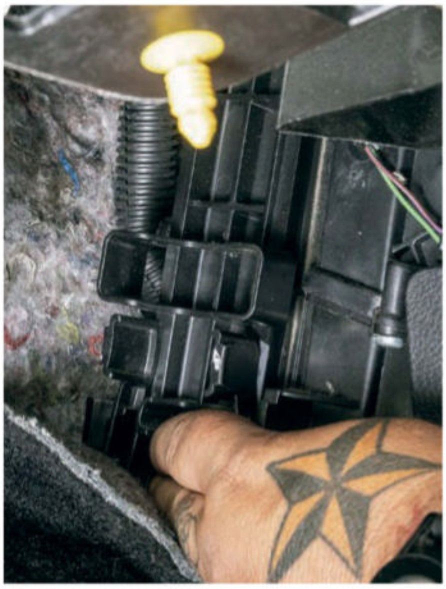




3 Now you can slide out the old filter. It's a tight squeeze between the filter housing and the fusebox, but you can deform the filter by compressing the paper pleats together to gain better access.



4 Install your new filter ensuring that the foam sealer is facing towards the front.



5 Refit the housing cover, pushing it back firmly to ensure it's seated properly.

TYPICAL COST

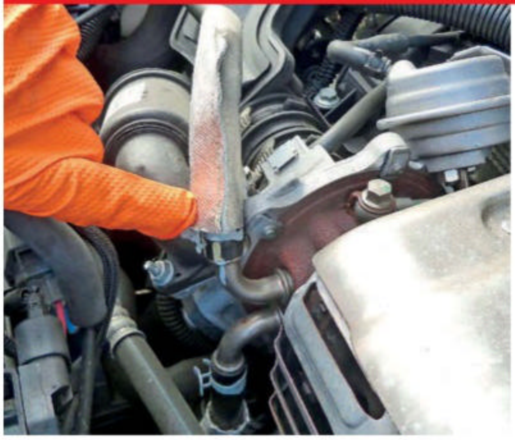
▶ Blue Print ADF122516 Activated Carbon Filter **£10.50**

BETTER MPG!

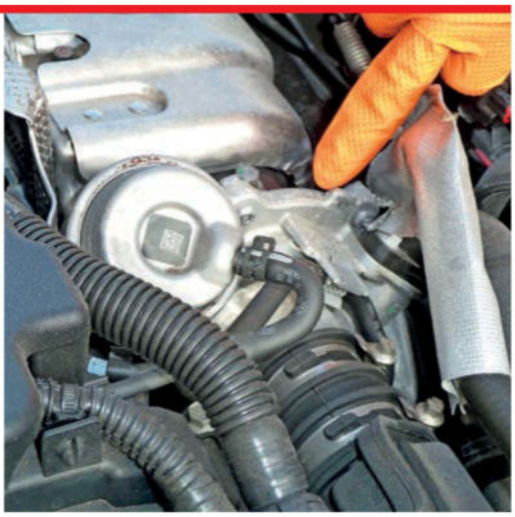
▶ Believe it or not a fresh cabin filter can also help improve your MPG during the summer months. A blocked cabin filter can hugely reduce the effectiveness of your air-conditioning system, which often results in it being turned up to get the same effect. The harder your A/C has to work, the harder the engine has to work, and this reduces your effective MPG. If you have problems with air-conditioning, or heater airflow, always check your cabin filter first.

⇨

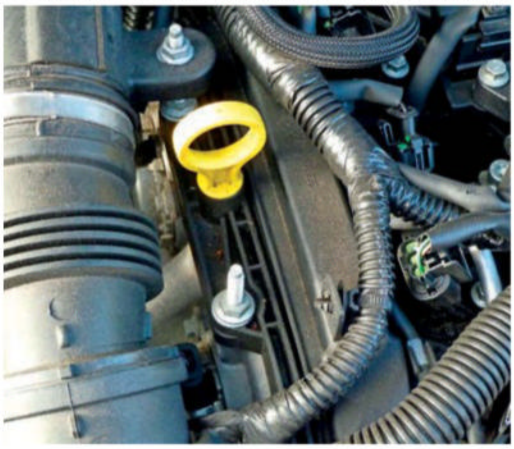
ECOBOOST KEY COMPONENTS



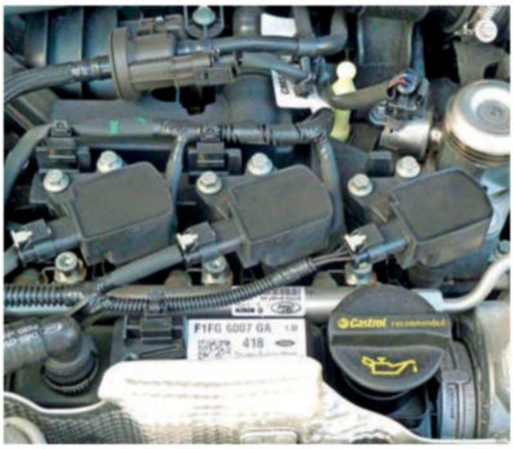
1 ◀ **This coolant feed pipe connected to the turbocharger is potentially a problem area on these engines. Early cars were fitted with a plastic type that was prone to breaking, resulting in a 'cooked' motor. Later examples have a more flexible and durable rubber hose.**



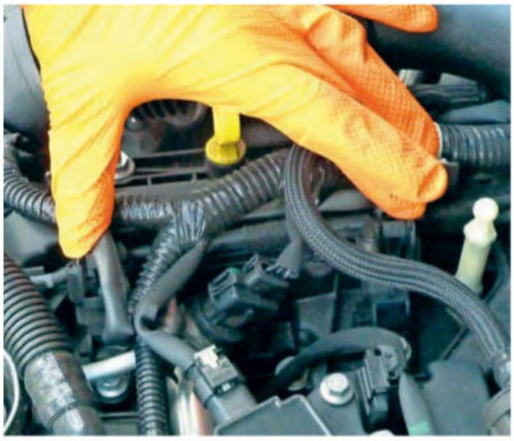
2 ▶ **The turbocharger is vital in helping EcoBoost engines deliver high levels of power and torque, while minimising emissions and fuel consumption. The turbo is generally reliable, provided frequent engine servicing and oil changes are carried out.**



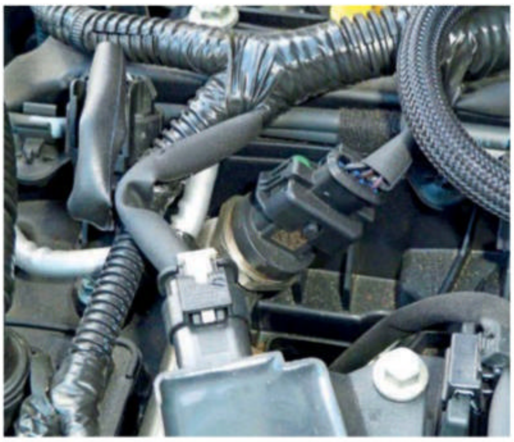
3 ◀ **Hidden beneath the plastic cover to the right of the dipstick is the 'wet' timing belt that runs in engine oil. It is critical that the correct viscosity of engine oil is used – if it's too thick, the belt can break. Always opt for 5W-20 fully-synthetic, and a brand you trust.**



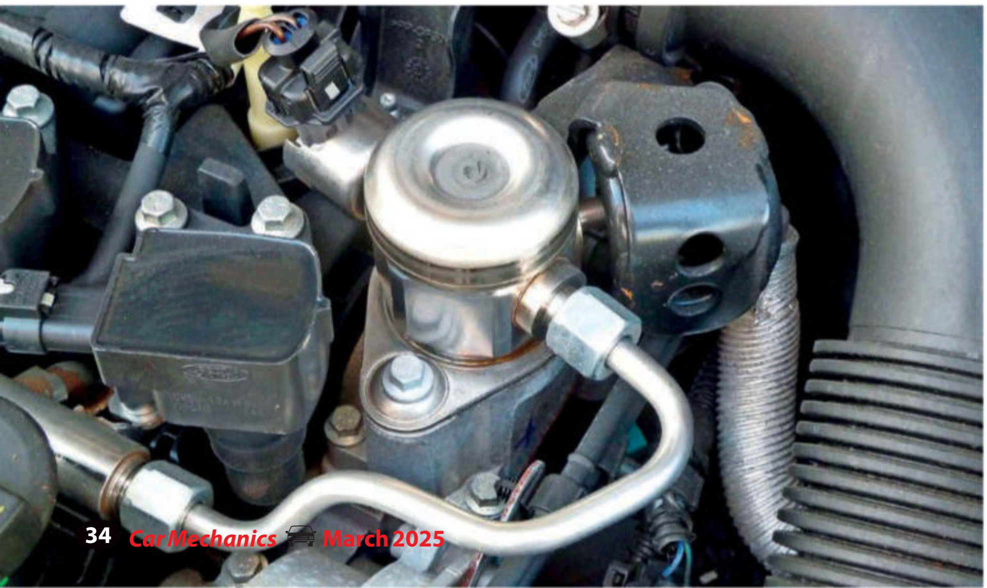
4 ▶ **The three pencil-type ignition coils are bolted in place and are readily accessible once the engine cover is removed. Look for blistering on the coils, indicating failure. With only three cylinders, the car will be left virtually undriveable.**



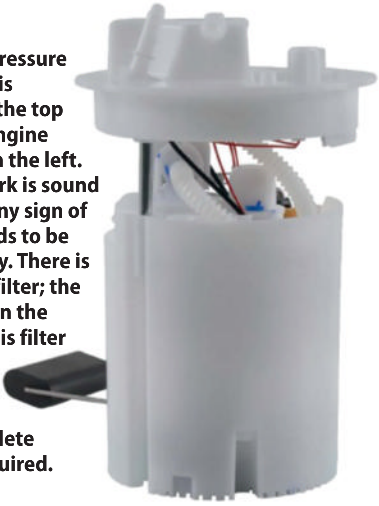
5 ◀ **There are position sensors serving the inlet camshaft – towards the front of the engine and to the left of this photograph – and the exhaust camshaft is towards the rear of the motor and beneath the middle finger in this photo.**

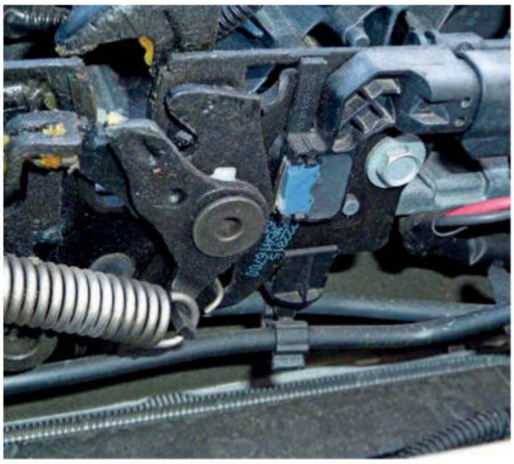


6 ▶ **The fuel pressure sensor, visible in the centre of this photo, is mounted at the right-hand end of the fuel rail. The sensor signals the fuel pressure present within the rail to the ECU, enabling the ECU to optimise fuel delivery.**



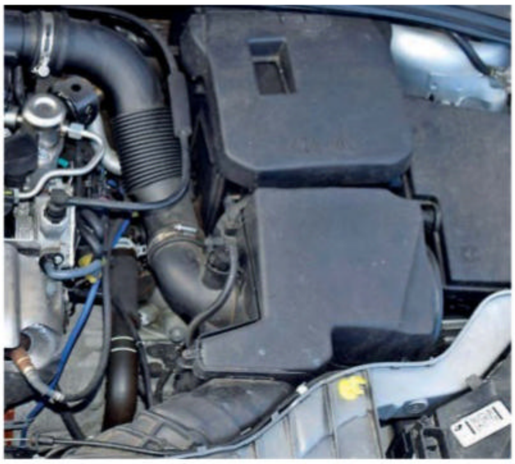
7 **The high-pressure fuel pump is located towards the top and rear of the engine compartment, on the left. Check its pipework is sound and isn't worn. Any sign of fuel leakage needs to be dealt with quickly. There is no external fuel filter; the only element is on the in-tank pump. This filter isn't changeable and, in the event of a problem, a complete pump will be required.**

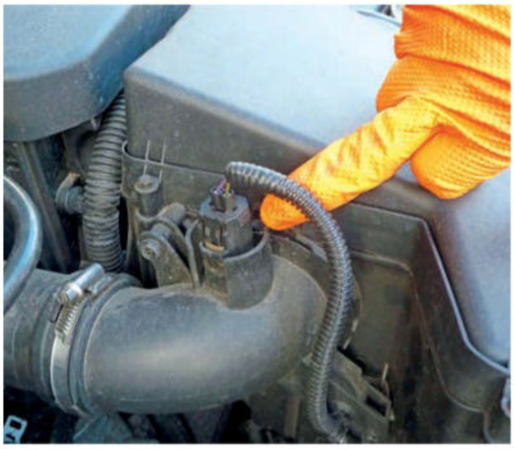




8 ◀ The bonnet latch assembly on the car's front panel might be considered an insignificant or innocuous component. However, if the sensor here detects that the bonnet isn't fully shut, the engine won't crank over. Lubricate sparingly.

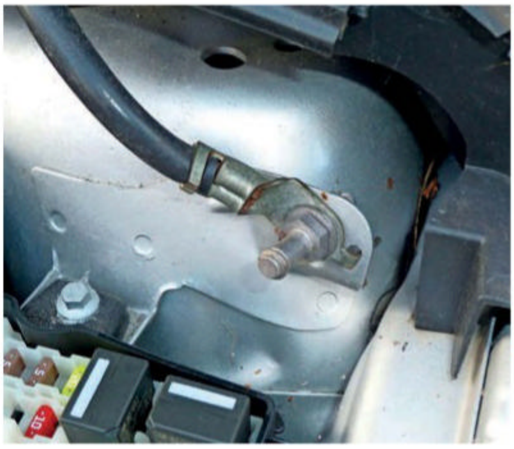
9 ▶ The air filter housing is found on the left-hand side of the engine bay and is readily accessible. Remove the lid of the housing to reach the filter element. When renewing the element, make sure the housing is clean and that the lid is firmly attached.





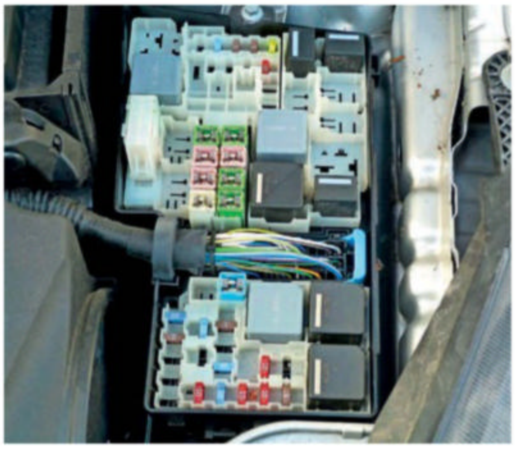
10 ◀ Located within the intake trunking is the air mass sensor. Its job is to assess the rate of air flowing through the system. It delivers this information to the ECU, which can then adjust fuelling levels to cater for the volume of air drawn in.

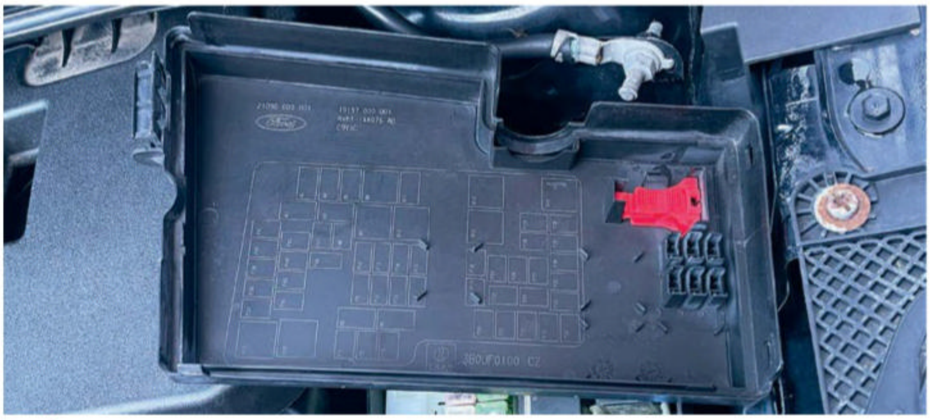
11 ▶ This model Focus requires an enhanced flooded battery. It is essential to use only the specified type of battery. Whenever the battery is replaced it is necessary to reprogramme the car to the new battery.



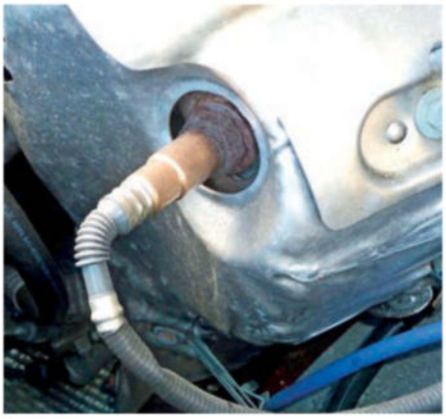
12 ◀ If the vehicle needs to be jump-started, use the negative (earth) jump-start connection point on the left-hand front suspension tower, rather than connecting the leads direct to the negative terminal on the battery.

13 ▶ The underbonnet fuse/relay box is located immediately adjacent to the left-hand front suspension tower. It is shown here with its lid removed.



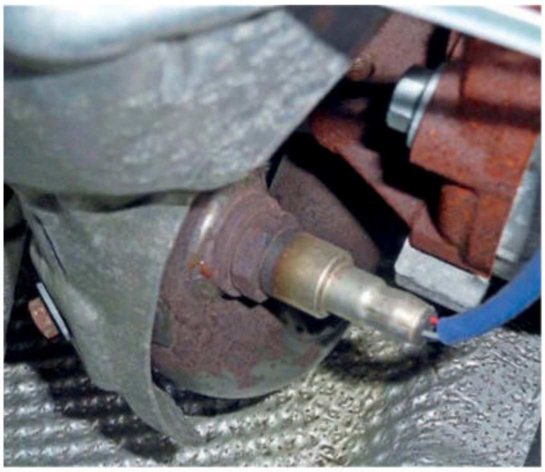


14 The underside of the fuse/relay box lid is marked with the positions of the components within. When refitting the lid, ensure that it is fully attached all the way around its circumference to prevent moisture ingress. There are two other fuseboxes on the Focus Mk3, one in the cabin and one in the boot.



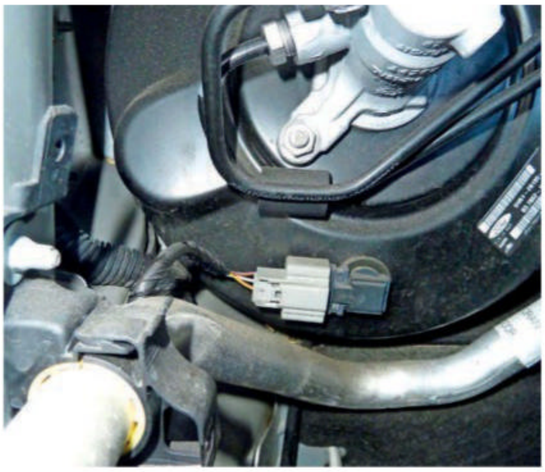
15 The pre-cat Lambda/oxygen/O_2 sensor is easy to reach at the front and top of the engine bay. Double check the condition and security of the sensor.

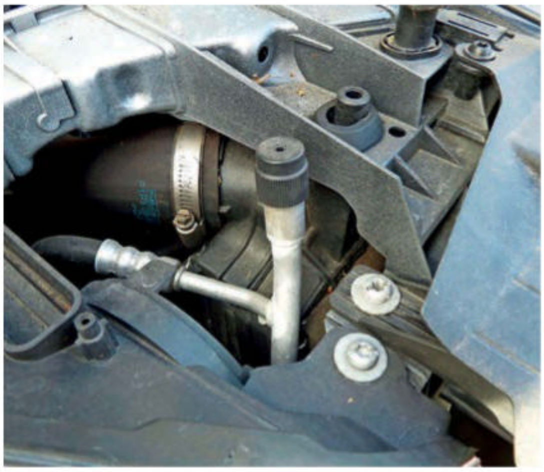
⇨



16 ◀ The post-cat Lambda/oxygen/O_2 sensor is positioned low down within the engine compartment. This sensor relays the fuel/air efficiency to the ECU, so that it can minimise emissions and fuel consumption.

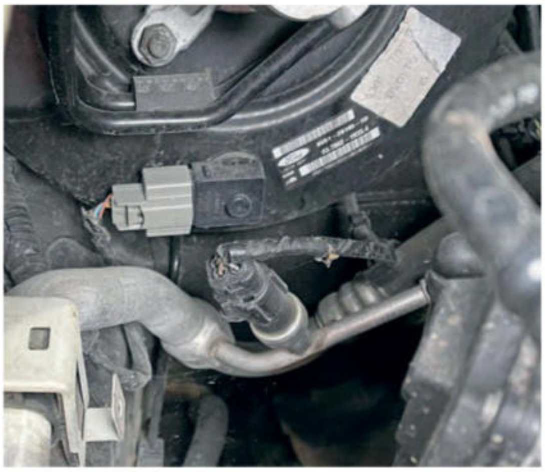
17 ▶ Visible in the centre of this photograph is the brake pressure sensor, which is mounted on the brake system's servo unit.

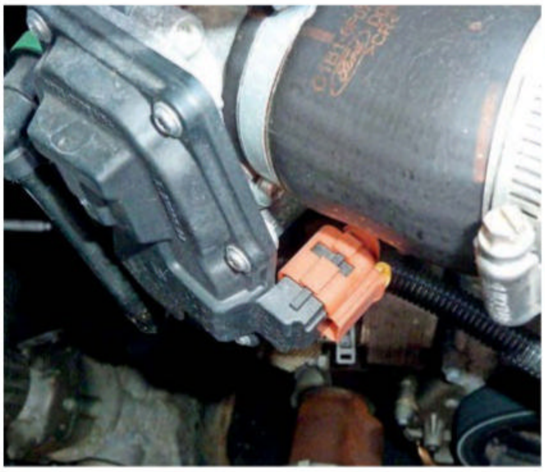




18 ◀ Central in this shot is the high-pressure recharge point for the air-conditioning system, found on the right-hand side of the bonnet catch. Note that the system takes 530 grammes of refrigerant gas (R134a) and uses PAG 46 oil to lubricate the compressor.

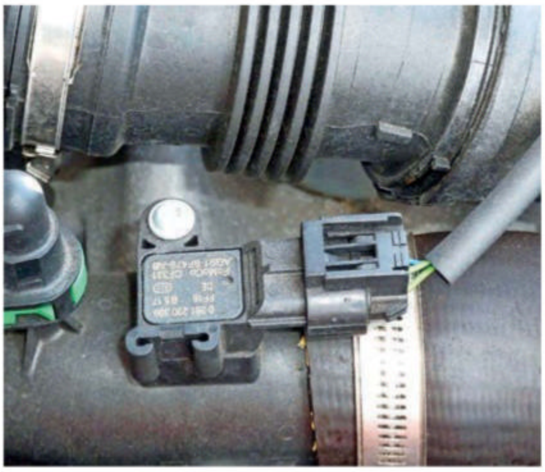
19 ▶ Found towards the rear of the engine bay, and to the left of the brake servo, is the low-pressure recharge point for the air-conditioning system.





20 ◀ This Focus employs a drive-by-wire throttle body assembly. It's good advice to check and clean the internal components as part of your servicing programme. Note the yellow anti-tamper clip on the orange plug assembly.

21 ▶ The manifold absolute pressure (MAP) sensor is found at the right-hand end of the engine. This sensor monitors the pressure within the inlet manifold, helping the ECU to determine correct fuelling levels.



22 The key-less entry model fob (left) and fob for non key-less entry models (right). Both types are relatively fragile. Always ensure that your key-fob contains a battery that's in good order. We recommend changing the battery at every service interval. Remember that if the car can't detect the fob voltage – the engine won't start.

Laser Tools: Your Specialist Supplier

LASER®

OUR LATEST INNOVATION!

9095

SCAN HERE TO LEARN MORE

Fuel Injector Seal Remover & Installer for BMW

Change the way you remove and install fuel injector seals faster and easier with our specialised tools.

Kit includes: The latest updated seal cutting and removal pliers, ensuring that your injector is not damaged during seal removal.

lasertools.co.uk +44 (0)1926 815 000 @ sales@toolconnection.co.uk

Scan here to explore the newest problem-solving tools

RING®

The Brightest Choice

Xenon220

Ring's best performing headlamp bulb

- **Up to 220% more light*** on the road ahead allowing you to see more
- See and be seen with a **longer beam pattern**
- **Better visibility** of road markings and signs
- **Up to 3700K** colour temperature meaning a whiter look in the headlamp compared to a standard bulb
- **No changes** to vehicle wiring required
- Available ECE types: **H4 / H7 / H11**

Find out more at:
www.ringautomotive.com
/ringautomotive

*compared to standard halogen bulb

Subaru Forester REAR STRUT REPLACEMENT

The self-levelling rear suspension struts fitted to many Subaru models often fail, but aftermarket replacements are a quick and easy fit. **Peter Rosenthal** reports.

Many estate versions of Subarus AWD models are fitted with self-levelling rear suspension. This entirely mechanical system can fail and combined with weakened rear springs, give the vehicle a rather saggy rear end. This 2003 Forester was looking quite sorry for itself despite having had the rear suspension replaced at some point.

To solve this common issue – and stiffen up the rear of the car to make it better suited for towing – Pedders Suspension UK (**www.pedders.co.uk**) offer a direct bolt on replacement kit (SG803040) for £460 that comes fully assembled with dampers, springs and new top mounts, dust covers and new top mount nuts. As the top mounts, dust covers and bump stops are bound to be perished on the original dampers, you'd be buying all these bits anyway, but the fully assembled strut saves hours of spannering.

Pedders also offer a heavier duty kit and a raised kit which also includes a set of front struts for £795. If you want to go the other way and lower it, then there's a kit for that too at £698.

All you need to add is a set of new lower strut bolts. These are available online for around £50 a set. Do not reuse the original 20-year-old items.

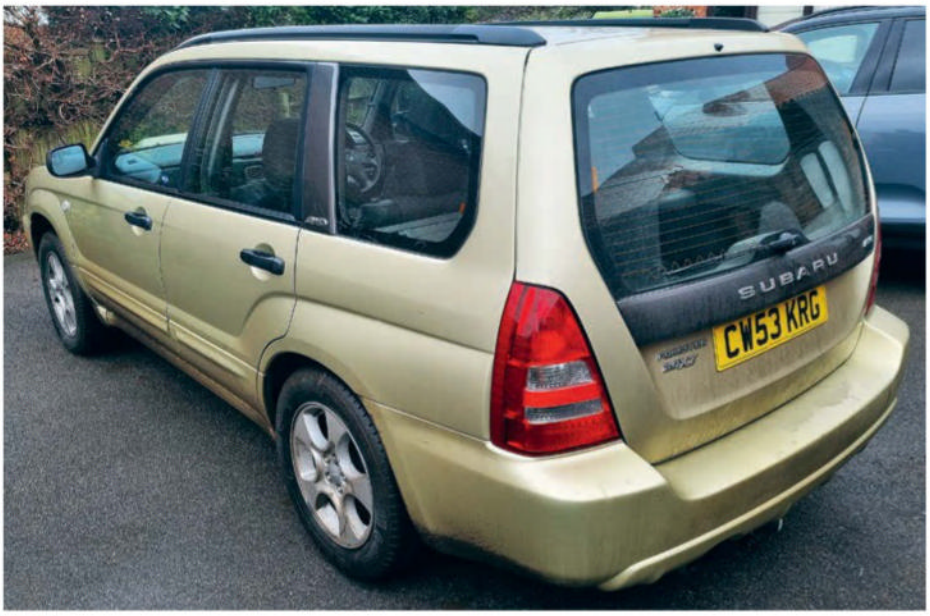
Compared to modern cars, fitting them is a doddle and having fully built-up struts means that you don't even need a spring compressor to install them. No specialist tools are needed but a decent impact wrench will make life a lot easier, and a blowtorch might be required on stubborn bolts.

The only thing to be aware of is the camber adjustment that is fitted to some later models (on this car there was no adjustment possible) and if the upper strut mounting hole offers any form of adjustment you will need have an alignment done on the vehicle. It's good practice to do a four-wheel alignment every couple of years anyway.

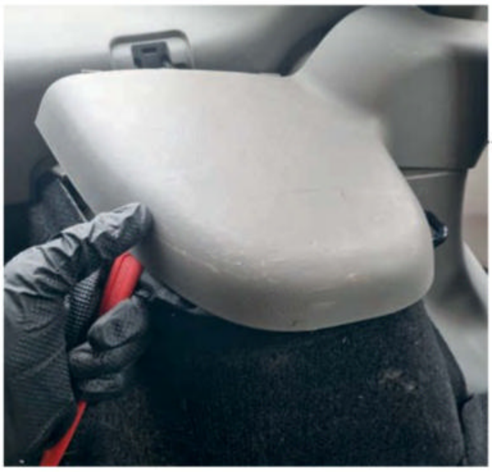
It proved a straightforward fit with only a couple of reluctant bolts needing heat and the job can easily be done in under two hours without any specialist tools.

EQUIPMENT REQUIRED

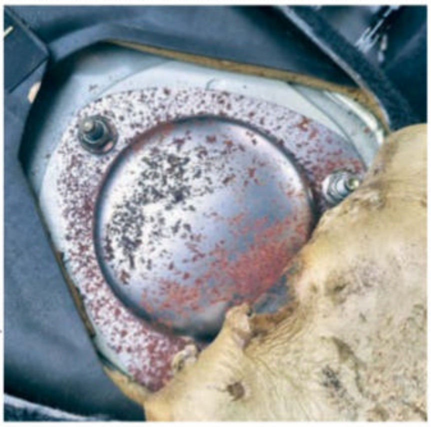
- Pedders Subaru Forester replacement struts
- New strut bolts (essential)
- 12mm, 13mm and 19mm sockets (impact and normal)
- 19mm spanner
- Old flat-head screwdriver
- Copper slip for new bolts
- Impact wrench
- Hammers and punch
- Penetrating oil
- Torque wrench
- Blowtorch



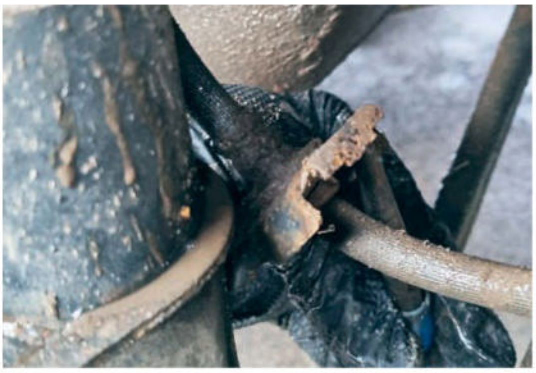
1 You can see how low the rear end of this Forester was sitting – it should set level with the front or a touch higher at the rear. This one was clearly past its best!



2 ◀ With the rear seats tilted forward and the retractable parcel shelf removed, use a plastic trim tool to lift the inner strut cover upwards and then outwards. It's only held in with plastic lugs.

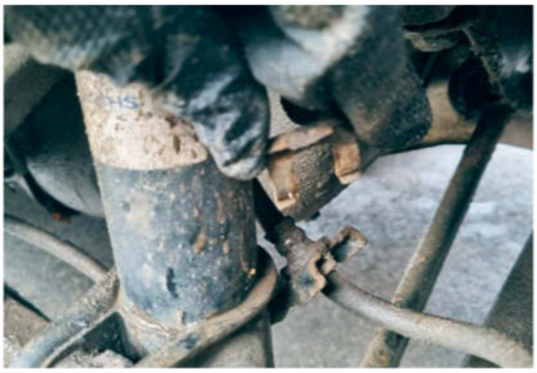


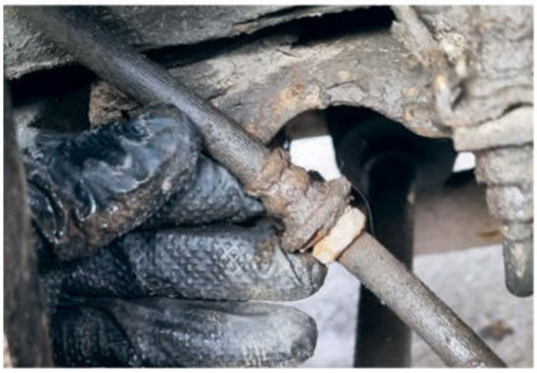
3 ▶ Fold back the sound-deadening foam and you should reveal the top of the strut mount which is held in place with three 12mm nuts.



4 ◀ Jack the car up, chock the front wheels and support it on a pair of axle stands, before removing the road wheels. The first task under the wheelarch is to remove this metal clip securing the brake hose to the strut. With a punch and a hammer, or an old flat-blade screwdriver lever it upwards.

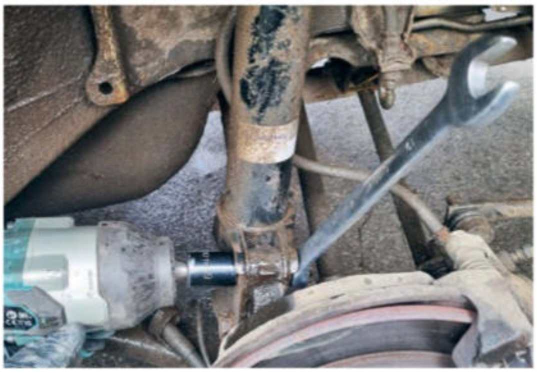
5 ▶ Once the clip has started to move, remove it fully from the hose and store it out of the way for safekeeping.

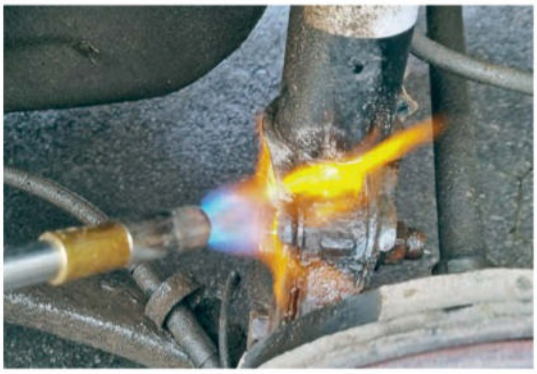




6 ◀ Lift the brake hose clear from the bracket and tuck it out of the way. You don't want to stretch it or nick it during this job.

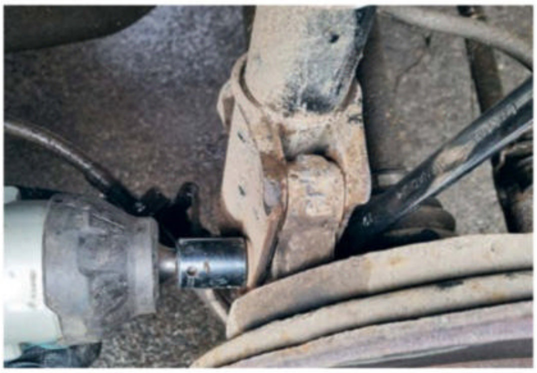
7 ▶ Use an impact wrench with a 19mm socket and a 19mm spanner on the nut and see if the strut bolts will break free. You can use a large breaker bar, but a large impact is easier.

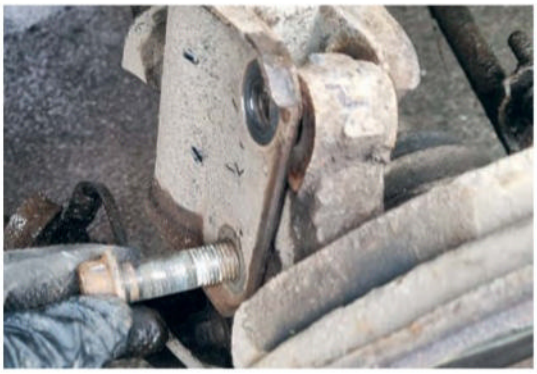




8 ◀ On the offside, both lower strut bolts came off easily with the impact gun. On the nearside, though, they were seized and needed a little heat to free (this isn't normally advised on struts, but we're replacing this one so damaging it isn't an issue).

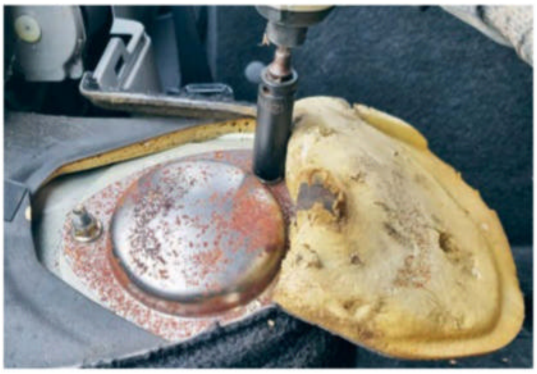
9 ▶ Happily, the heat worked and the top bolt span out without too much of an issue and the lower one then span out too.

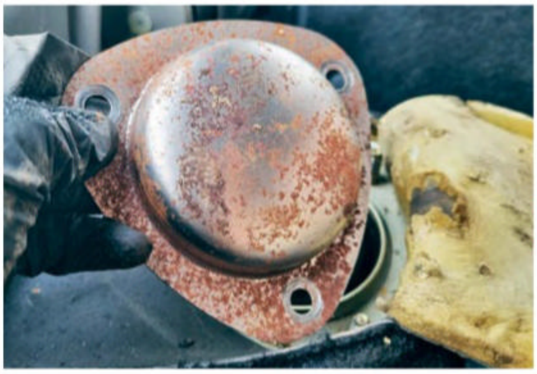




10 ◀ Don't fully remove the lower bolt just yet – leave it partially in so that the assembly doesn't fall off while we work on the top mount fixings.

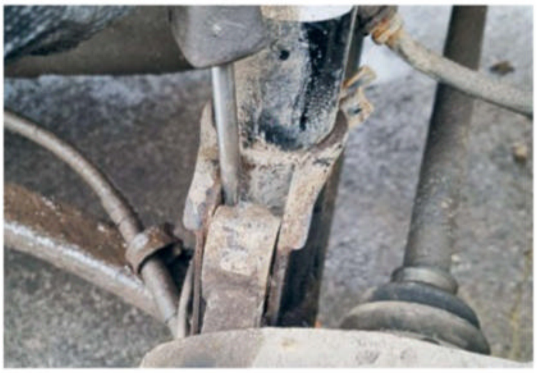
11 ▶ Use a smaller impact gun on the top mount fixings and buzz all three off. They're not particularly tight. Have an assistant support the strut while you do this to prevent it dropping.



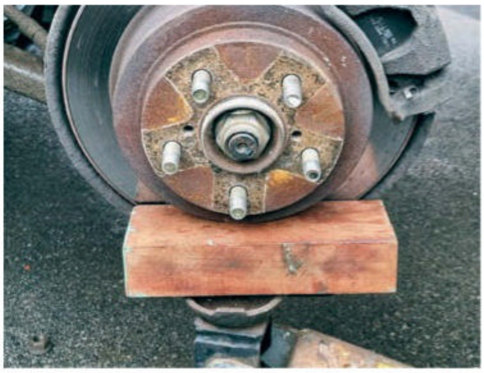


12 ◀ Remove the top plate covering the strut and place to one side. It only fits in place in one orientation so try and keep it angled in this direction.

13 ▶ With all the bolts removed use a pry bar or an old screwdriver to lever the wheel bearing carrier out of the strut. Hold the strut with your other hand and be prepared to take the weight of it.

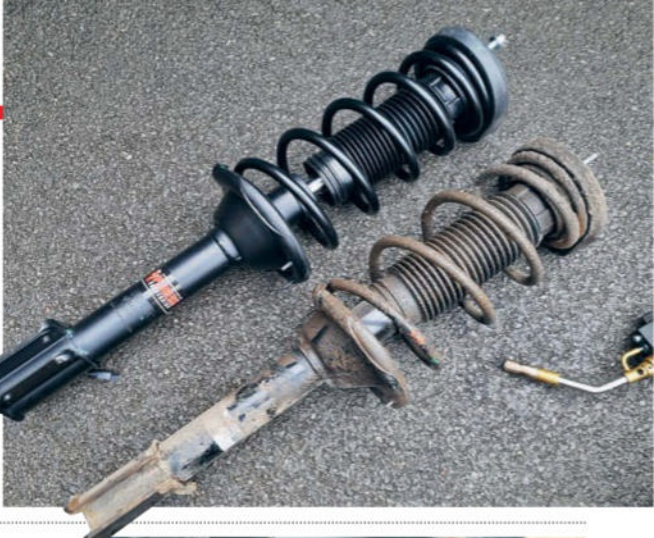


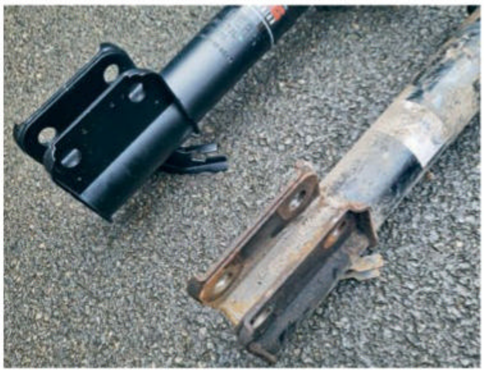
Subaru Forester rear strut replacement



14 ◀ The strut can now be removed from the car – taking care not to damage the ABS wiring or handbrake cable when pulling it free. Support the wheel disc with a jack padded with a block of wood.

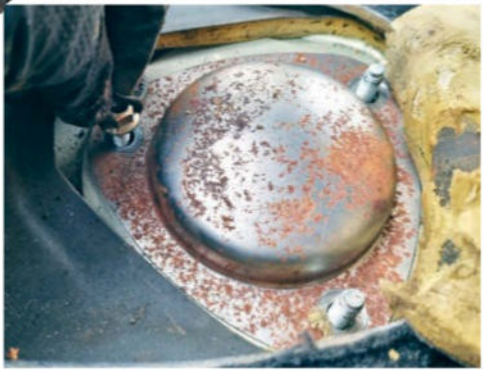
15 ▶ Compare the old and new struts to check that they will fit. This new Pedders unit comes fully assembled with a new spring and top mount making it particularly easy to fit – no spring compressors needed!

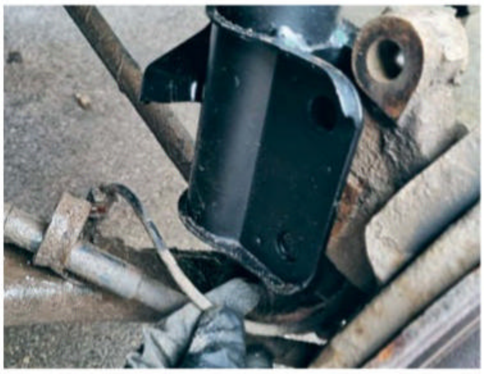




16 ◀ Double check that the bolt hole sizing and spacing is identical on the old and new struts. The holes on these dampers were not slotted (and nor was the wheel bearing carrier) so no camber adjustment is possible. If your car has slotted ones, then you will need to get the vehicle aligned afterwards.

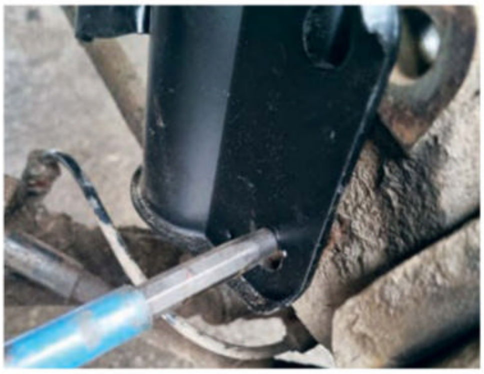
17 ▶ Place the new strut through the top mount holes, reattach the top mount cover and screw on a couple of the new nuts supplied in the Pedders kit. Don't tighten these fully yet as it's helpful to have some movement at the other end of the strut.

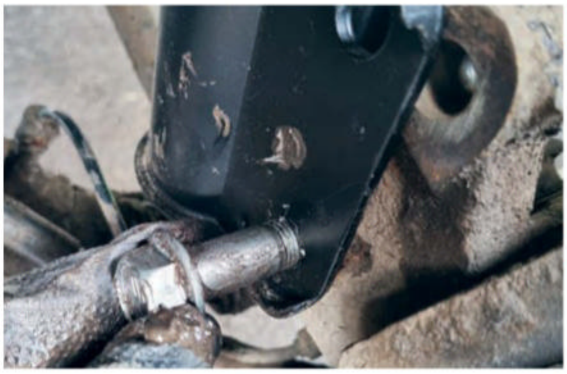




18 ◀ When you are waggling the new strut into place be very careful of this ABS braking wire as it's very easy to damage it with the strut. Slot the strut over the wheel bearing carrier flange and then you can align it.

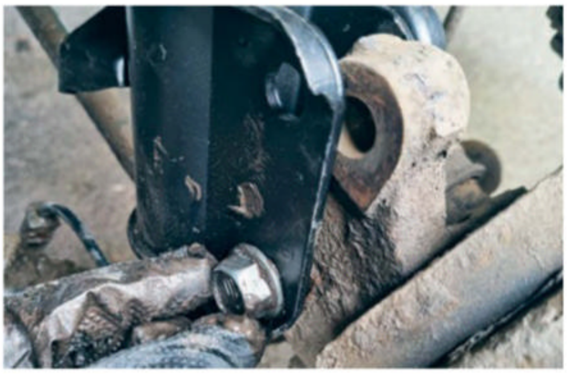
19 ▶ With the jack lowered down a little and an assistant pushing down on the brake disc, wedge a punch or old screwdriver into the lower strut bolt hole. Waggle this hole so that it aligns with the strut flange.

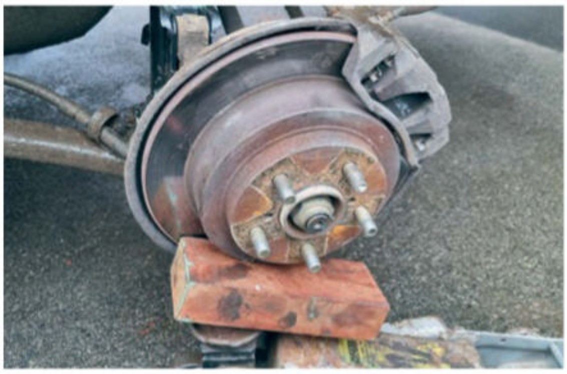




20 ◀ Once the hole is aligned stick the replacement bolt in place (we've copper slipped it to prevent it seizing in future) and start to push through.

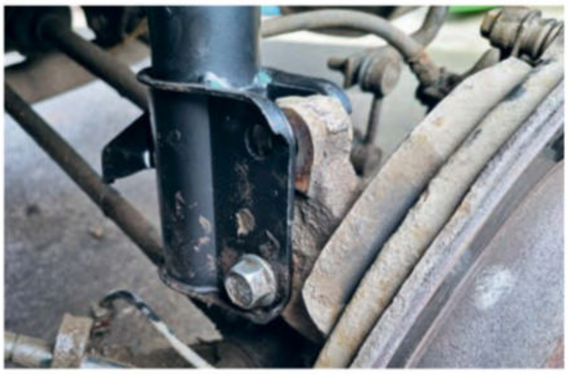
21 ▶ Fully push the lower bolt home and then attach the new nut on the other end of bolt to prevent in being knocked out.

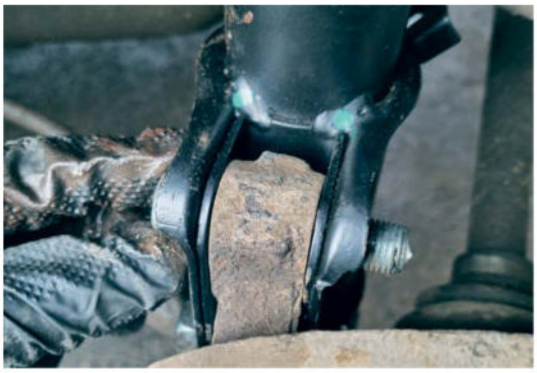




22 ◀ Using the jack under the end of the brake disc, gently pump it up a few times to get the top strut hole to align with the wheel bearing carrier.

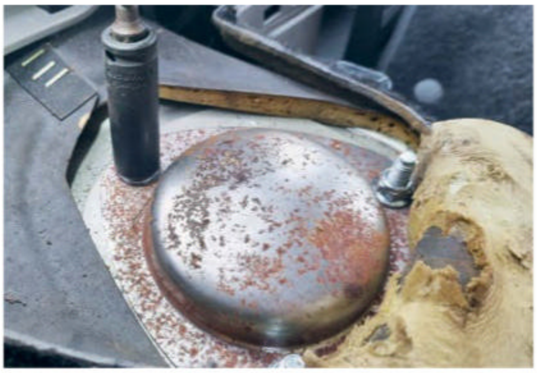
23 ▶ As the hub assembly pivots around the lower bolt, the upper holes will eventually get aligned. There is no camber adjustment on this particular car so the holes will line up perfectly.

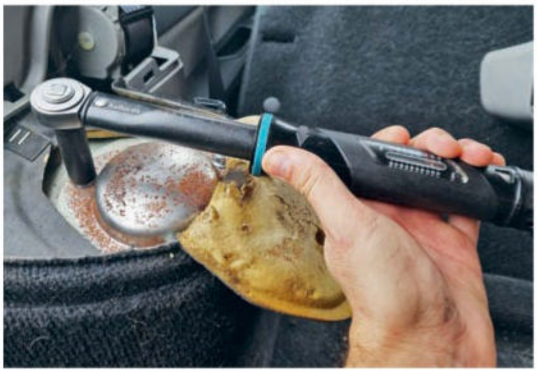




24 Once the holes are aligned, push the new upper bolt fully home with a smear of grease or anti-seize compound.

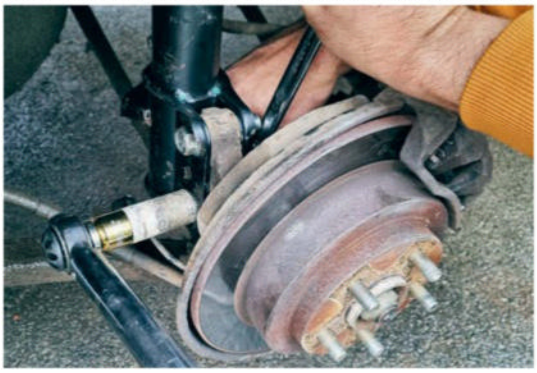
25 The top mount nuts can now all be tightened down with the impact gun. These replacement nuts were supplied with the new suspension kit and were 13mm.

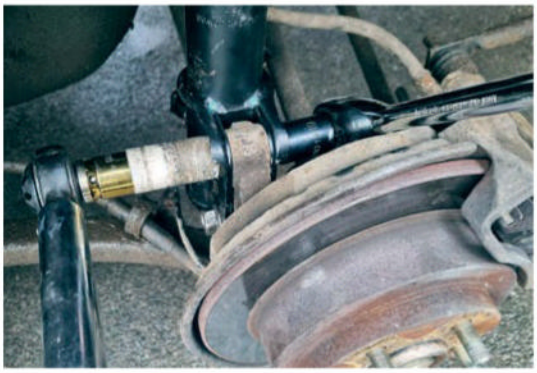




26 Torque the top mount nuts down to 20Nm (15lb ft) and fold the sound deadening material back in place over the top.

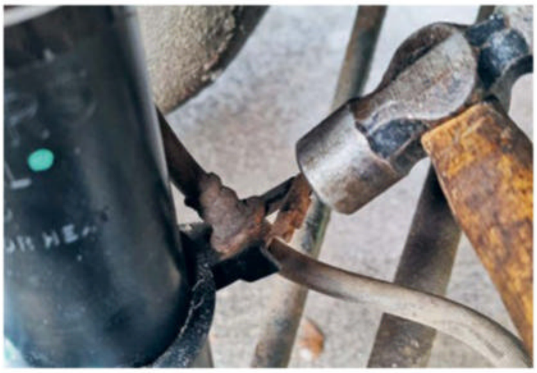
27 It's easiest to have an assistant hold the 19mm spanner on the nuts while you tighten down the 19mm strut bolts. These need to be tightened to 175Nm (129lb ft).

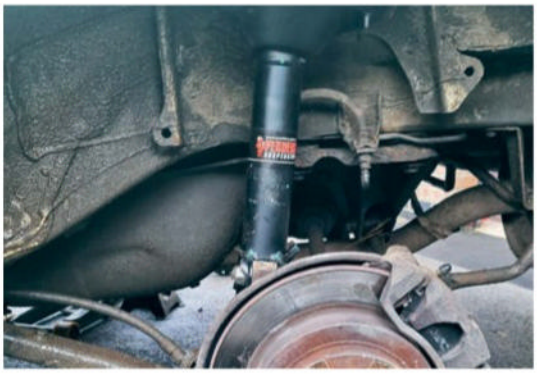




28 You can use a socket on the upper strut nut for extra leverage and again these are tightened down to 175Nm (129lb ft).

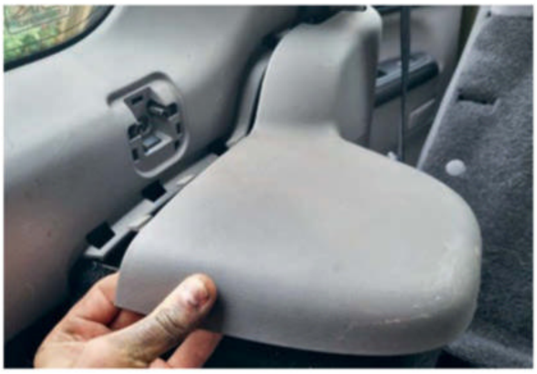
29 Reattach the brake hose in the bracket on the new damper and then tap the securing clip gently back in place with a small hammer.





30 This is what the completed suspension strut should look like and the whole job shouldn't take you more than around an hour a side. Access is good on Subarus so it's pretty straightforward.

31 The final task is to refit the inner trim panel by hooking it over the front edge of the door trim and then clicking the lugs into the side panel. Then bash it down vertically to refit the clips on the strut tower.



32 You can now refit the road wheels, remove the axle stands and jacks and set the car back on its wheels. Torque the wheelnuts up to 120Nm (89lb ft). Take the vehicle for a drive to level the suspension and listen out for any clonks. In this case there were none and the vehicle sat far more level at the back. Result!

Citroën Xantia WINDOW REGULATOR CLIP

Peter Rosenthal replaces the window regulator clip on a Citroën Xantia. The same clip is also used on the Saxo and Peugeot 306.

The design of window regulator used on Citroëns and Peugeots of around the early 2000s was pretty poor and the single clip securing the glass is prone to failure. What tends to happen is that the guide wire rips out of the plastic clip and becomes slack, causing the clip and window to drop to the fully down position. Sometimes this damages the cable, sometimes it can be reused.

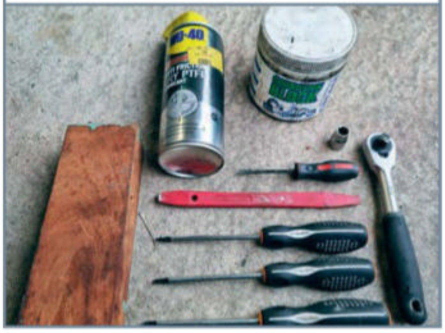
Replacement cables and clips are widely available online with prices starting from £2.99 for the clip (they're handed for each side) and less than £15 for the cable (which is the same on both sides).

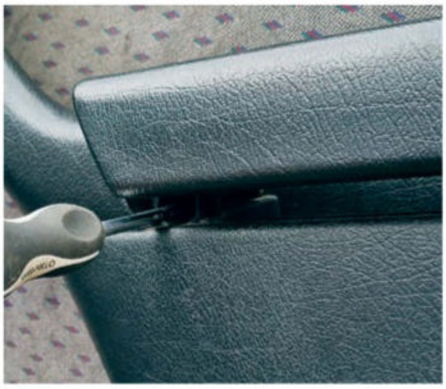
In this case the cable was fine and just the clip needed replacement. Once you get the window regulator out it's not that big a job but getting to the mechanism is what takes the time. In this case, the clip had been replaced several times (debris from about three other clips was found in the door recess) so it's a familiar job for any long-term Citroën or Peugeot owner.

It takes around an hour and a half per side to do and the only specialist tools needed are a selection of Torx head screwdrivers and some plastic pry bars (thin screwdrivers would suffice).

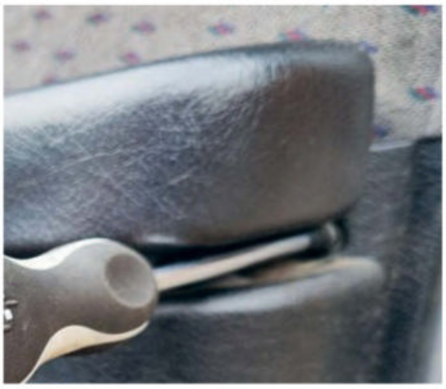
EQUIPMENT REQUIRED

- T10, T20 and T30 Torx screwdrivers
- 10mm socket and 3/8in ratchet driver
- Plastic pry tools
- Replacement clips
- Dry PTFE lubricant
- Thin screwdriver
- Grease
- Block of wood

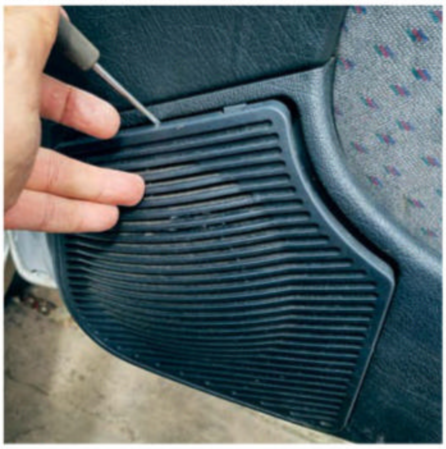




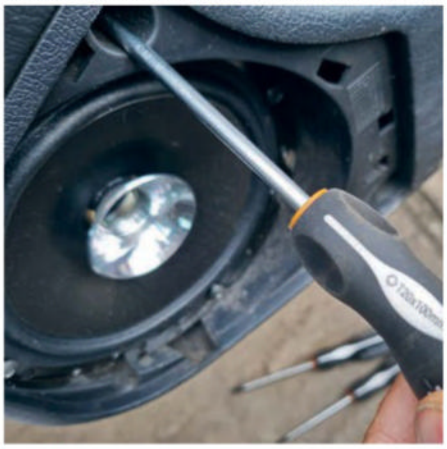
1 Partially lift up the door card lid to expose the two T30 Torx screws hidden beneath. There is one at the forward edge…



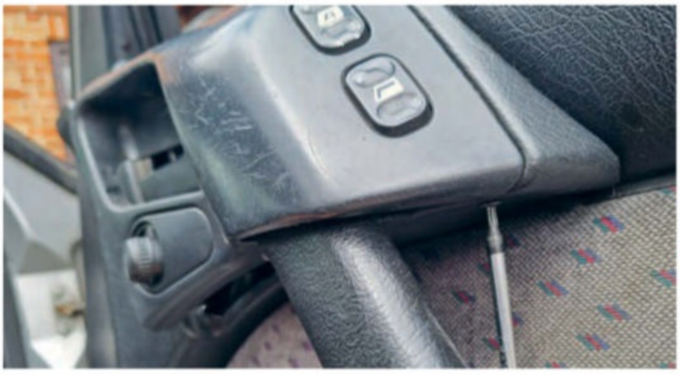
2 … together with one at the rearward edge. Remove both and secure them in a tub or tray.



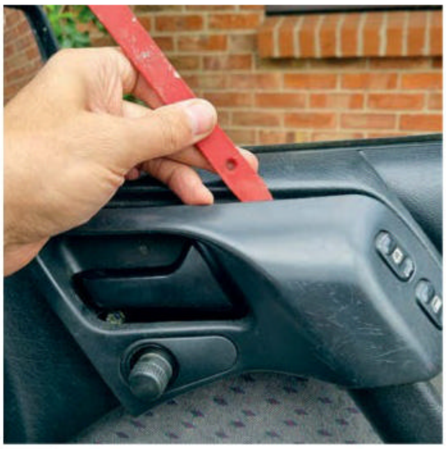
3 Using a slim pry tool or a thin screwdriver, prise off the upper edge of the plastic door speaker grille. It has securing tabs at the top and lugs at the lower edge.



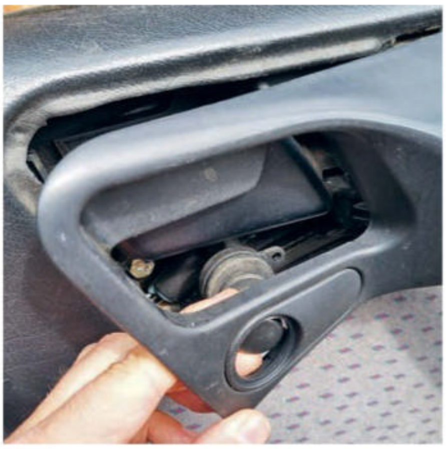
4 Remove the T20 screw located just above the speaker cone in a recess. The rest of the speaker screws do not need to be touched.



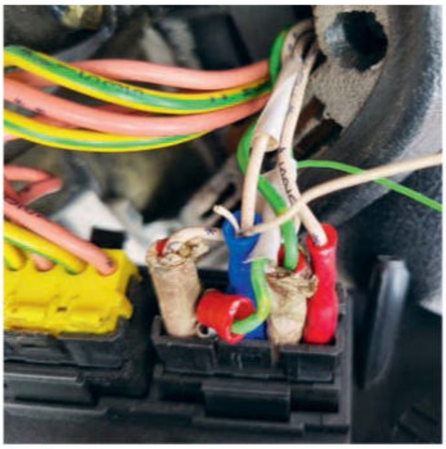
5 ◀ Hidden under the electric window switch bezel is a sneaky little T10 Torx screw. Remove this if it's still there, they often get broken and discarded.



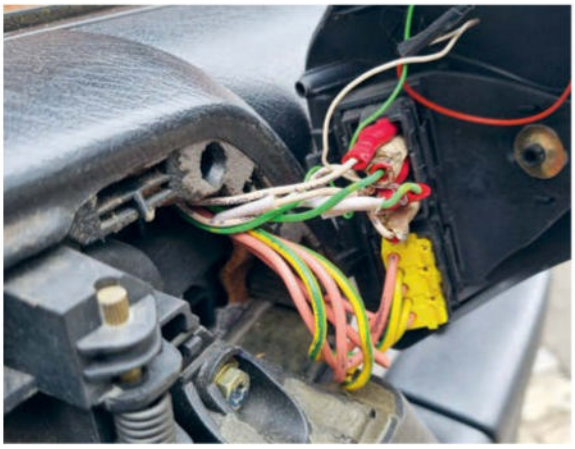
6 With your plastic pry bar, gently ease the plastic bezel away from the door card. They're surprisingly tightly clipped on, so take your time.



7 Remove the bezel by pushing the manual door mirror control (fitted to the RHD driver's side only) backwards through the hole. The bezel should now come free.

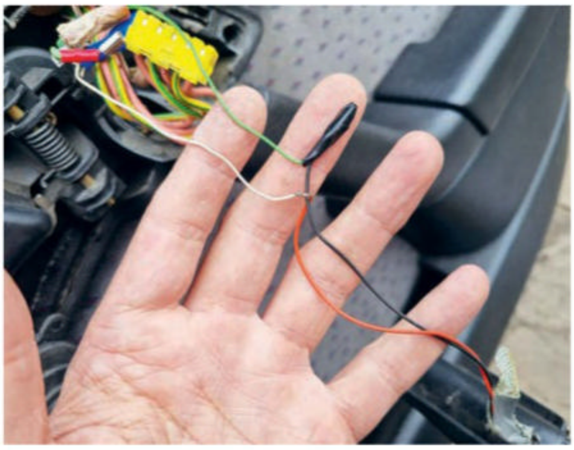


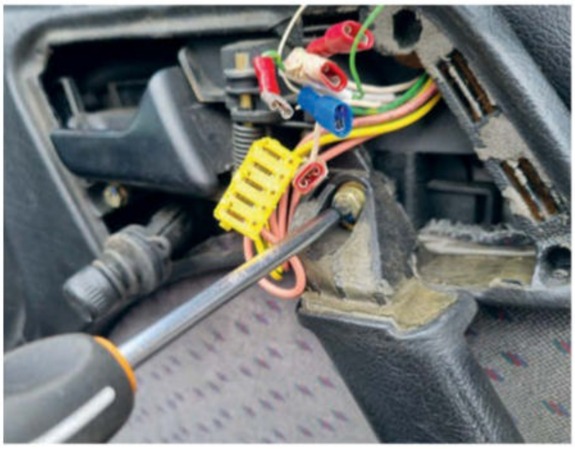
8 You can clearly see that the original wiring loom clip has been replaced with spade connectors as some other mechanic has been in here before. These needed tidying up.



9 ◀ After tidying up the wiring, take a photo of the wire colours to avoid transposing any. This isn't necessary if your car retains the original wiring loom clip.

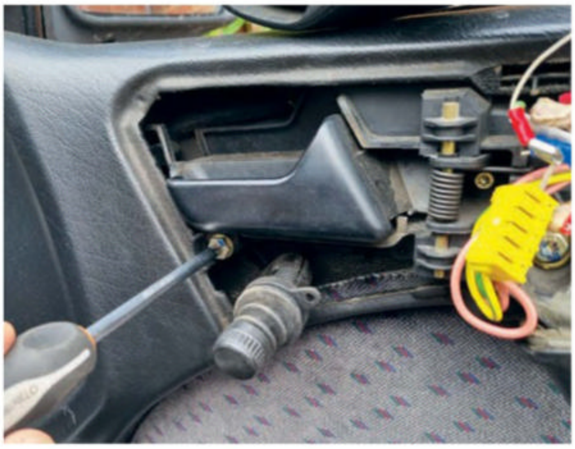
10 ▶ This additional wire is for the door handle illumination and needed to be repaired. The bezel was cable tied out of the way while the rest of the doorcard was being removed.





11 ◀ With the wiring disconnected, the T30 screw at the top of the grab handle was unscrewed.

12 ▶ Underneath the inner door handle is a second T30 screw that must also be removed.

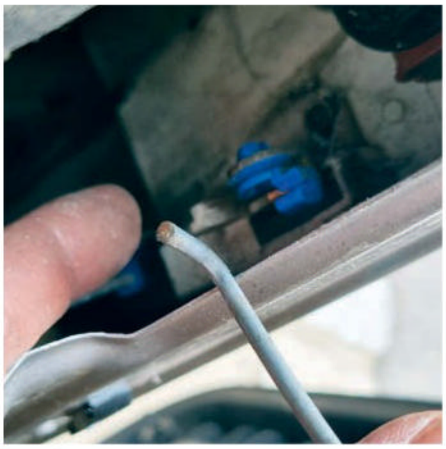


13 ◀ Unclip the lower and side edges of the doorcard (They often break so it's wise to buy spares) and then lift it up vertically to release it from the upper edge of the door frame.

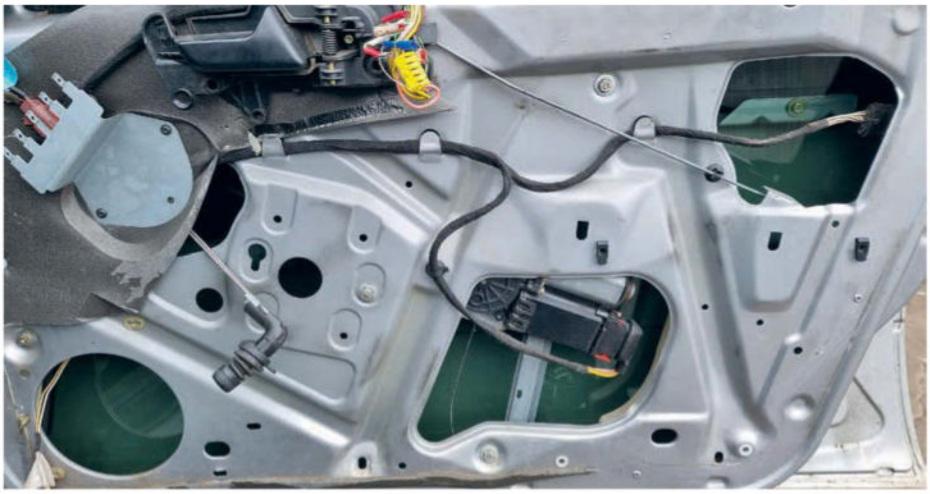
14 ▶ Unclip the speaker wiring from the rear of the speaker. This is usually handed with a thin and a thick spade terminal.

⇨

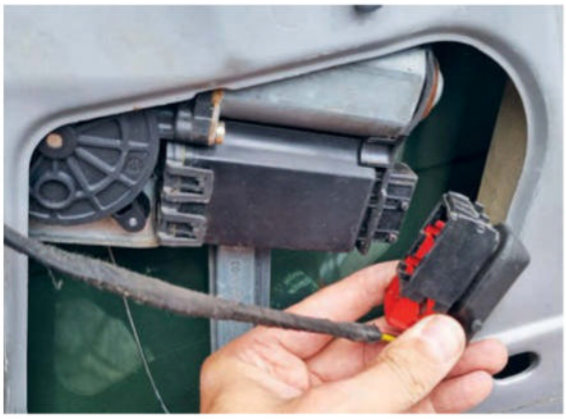
2000 Citroën Xantia window regulator clip



15 Unhook the door lock actuation arm from the blue clip inside the door and you should now be able to remove the whole doorcard from the car.

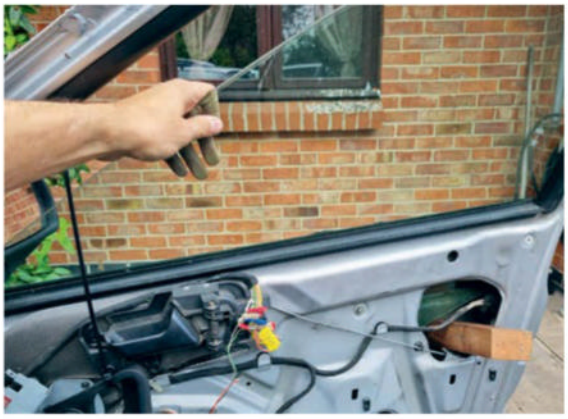


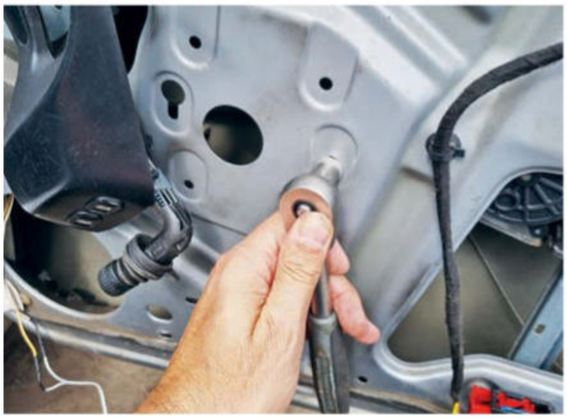
16 You can see that the glass has dropped down into the door recess and that the wire that should be attached tautly to the regulator is loose by the motor.



17 ◀ Unclip the electric window motor wiring loom plug by pulling the red tab downwards and rearwards.

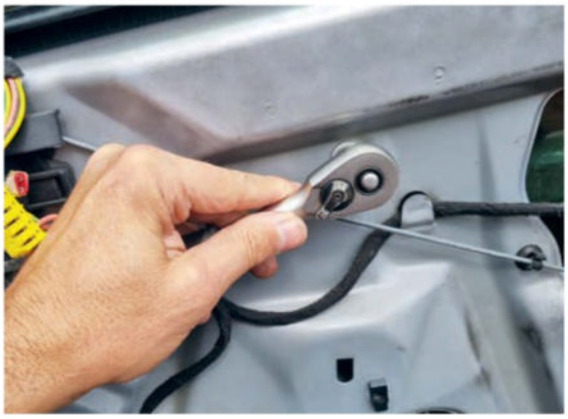
18 ▶ Grab a block of wood and using two hands lift up the door glass. It might need to be located on the sliders and it's a fiddly job. Wedge the block of wood into a hole in the door frame to stop it dropping back down. You could also tape it in place.

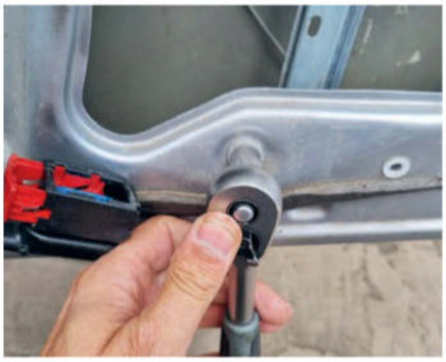




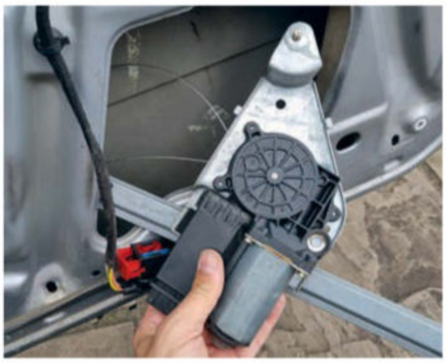
19 ◀ Three nuts secure the window regulator mechanism to the door frame. Unscrew the central one.

20 ▶ The upper window regulator 10mm nut is located close to the top of the door frame to the rear of the electric window switch. Unscrew and remove.

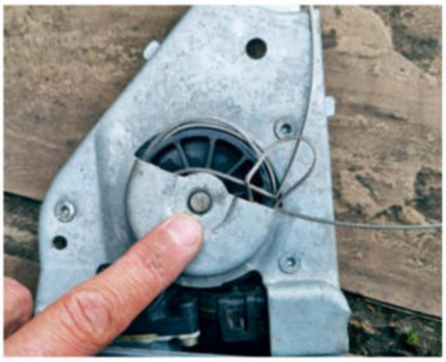




21 Unscrew the final 10mm nut that secure the window regulator, and the unit should start to come free. There's no adjustment on it so you don't need to worry about positioning.

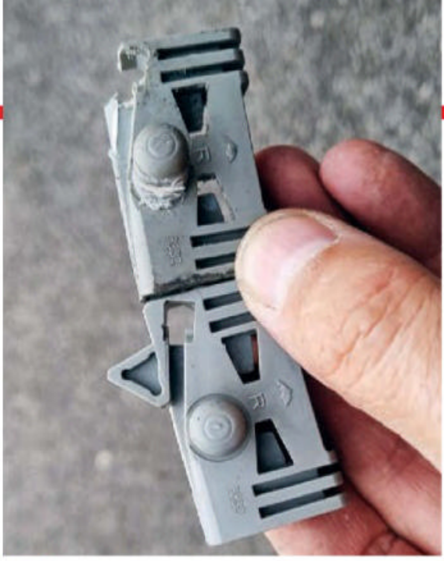


22 Release the window regulator by pushing it backwards off the studs and rotating it inside the door recess so that the uppermost edge comes out first. It is very fiddly to remove as there's so little clearance.

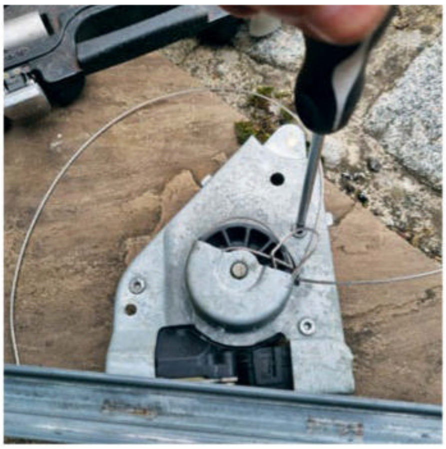


23 You can clearly see that when the clip snapped, the cable became jammed up. Sometimes this also damages the motor drive wheel and cable (both can be bought cheaply) but you won't know until it's dismantled.

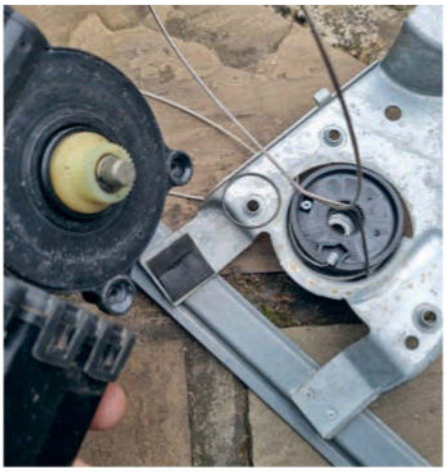
2000 Citroën Xantia window regulator clip



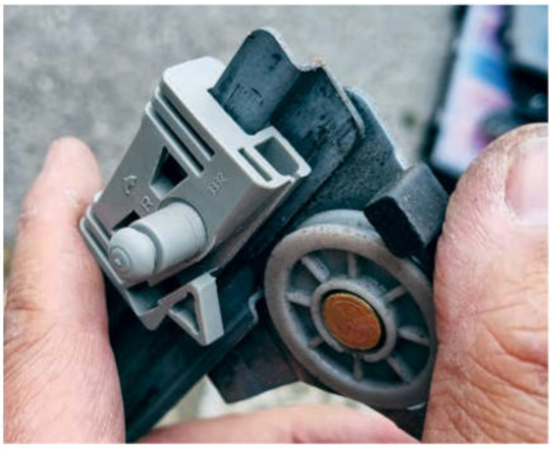
24 This is the remains of the original clip (top) next to the new clip and you can see where the triangular lug of the cable securing tab has snapped off over time. This is a common weakpoint.



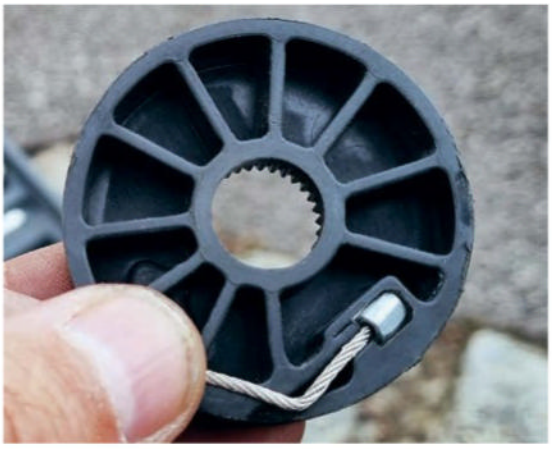
25 The motor needs to be removed next to assess the condition of the drive wheel. It's secured by three T20 Torx screws, remove these and lift off the motor.



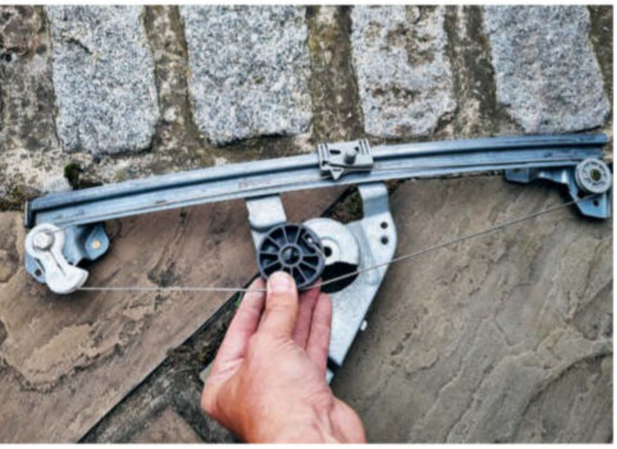
26 Take care not to lose the circular metal grease clip and refit it to the motor if it becomes detached (as shown here).



27 ◀ Check that your replacement clips fit on the window regulator. This is particularly important as most of the clips are aftermarket with varying levels of quality.

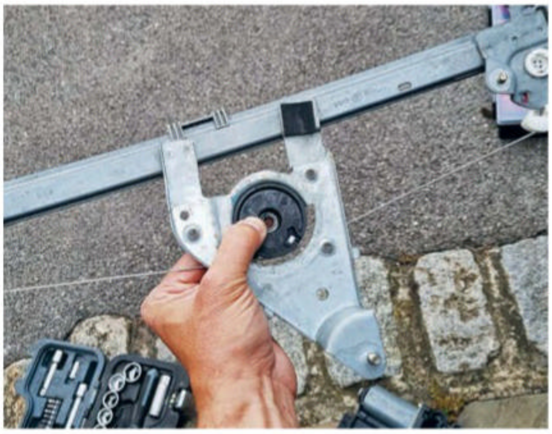


28 ▶ Remove the drive spool from the regulator and unclip the cable. You can see that the cable end is kinked here – straighten this out before refitting it.

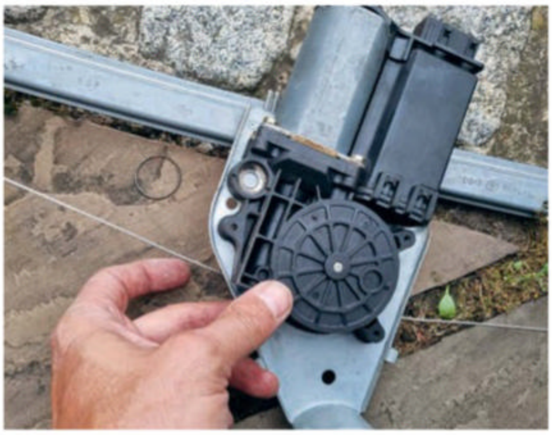


29 ◀ If the cable and spool can be reused, carefully wind the cable onto the spool, keeping it as taut as possible. The spring on the lower tensioner (the white plastic bit) often pops out and may need to be repositioned. It should look something like this.

30 ▶ Before refitting the motor spool, grease the metal backing plate to try and make the mechanism as smooth as possible.

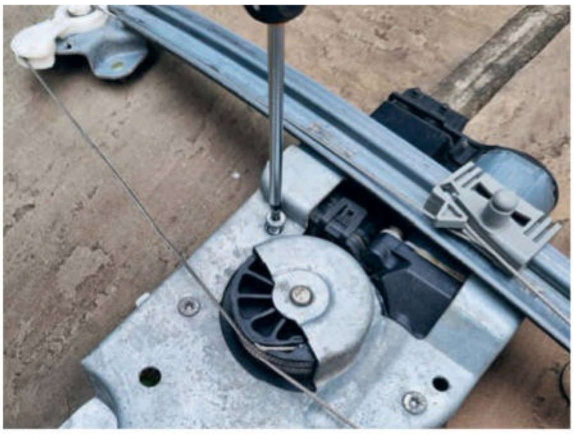


31 ◀ Holding the mechanism in place with one hand get everything aligned with the motor hole and get ready to refit the motor. The position of the slider doesn't matter – but it's easiest to have in centrally so you have a roughly equal amount of wire on both sections of the drive spool.



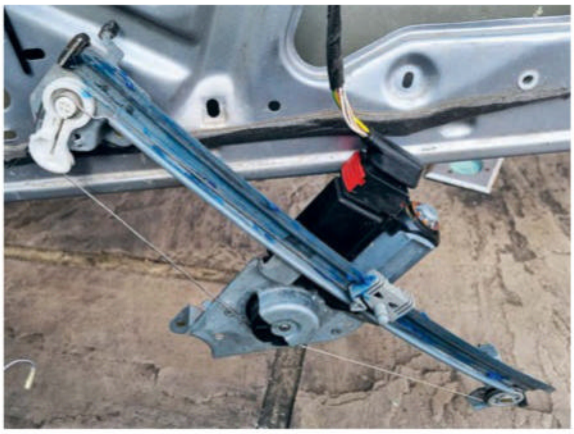
32 ▶ Refit the motor in place making sure it lines up with the splines on the spool and the screw holes.

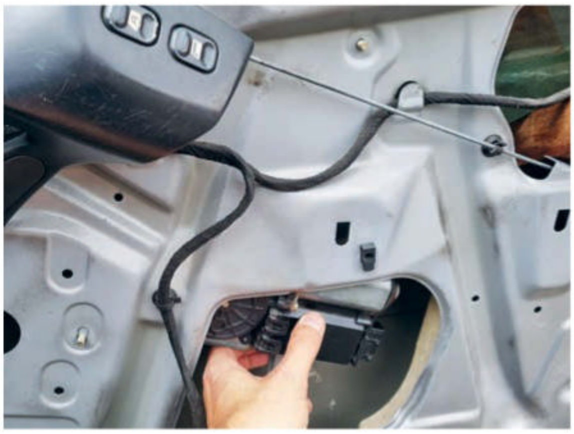
⇨



33 ◀ Refit the Torx screws in place on the motor and tighten them up.

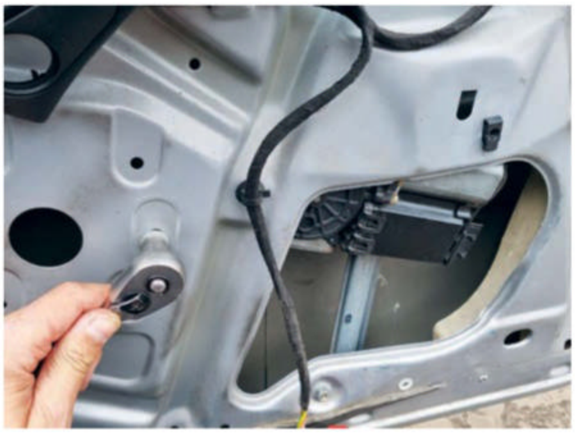
34 ▶ Grease the slider mechanism to help it slide as easily as possible, then plug in the motor to the car loom and check it slides up and down easily. If it doesn't check for issues with the spools or cable run.

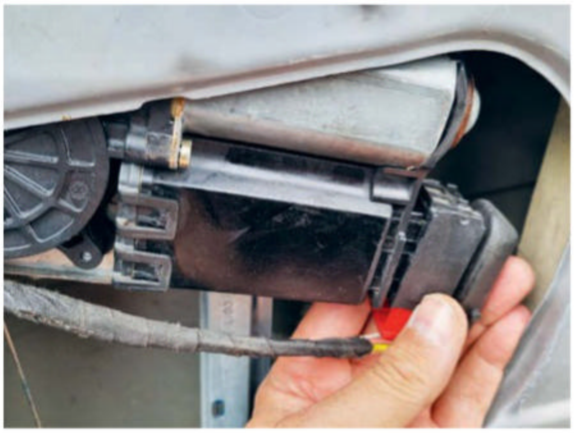




35 ◀ Once you're happy with the regulator function, refit it into the door aperture. This is a fiddly process and may take several attempts and orientations, but you will get there with patience!

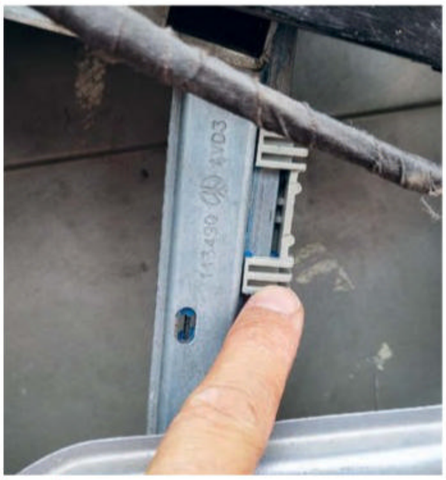
36 ▶ Reattach the central 10mm nut to the regulator stud, as well as the upper and lower nuts and tighten them all up.



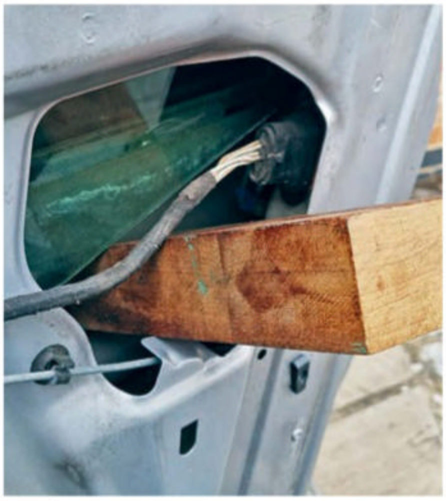


37 ◀ Refit the loom plug to the motor and make sure the red tap is pushed fully home.

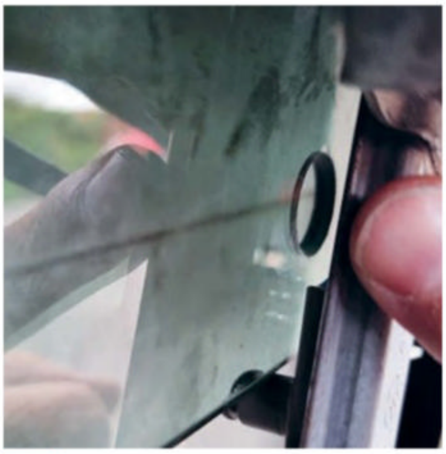
38 ▶ Check that the electric window mechanism works OK on the switch.



39 Press the electric window button down until the plastic clip is visible in the lower aperture – it needs to be located near this position.

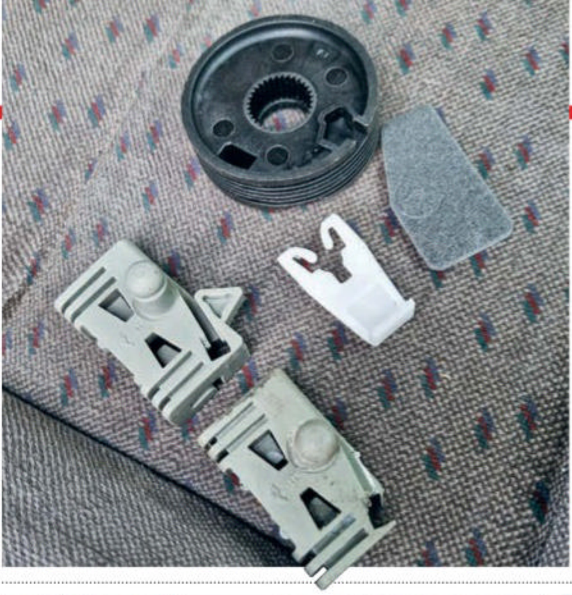


40 Remove the block of wood (or tape) that prevents the door glass dropping down and carefully lower it down its slide channels.

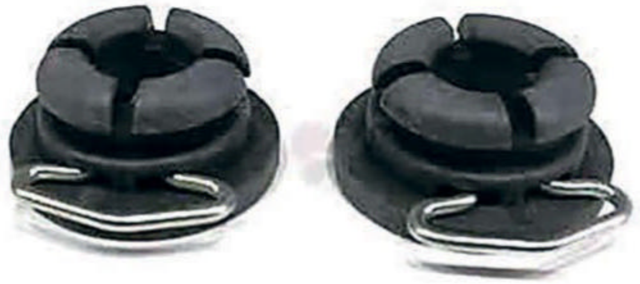


41 This hole in the glass needs to be positioned so that the lug on the new clip supports its weight. The glass can be flexed slightly to sit over this lug (hard to photograph but you get the idea).

2000 Citroën Xantia window regulator clip

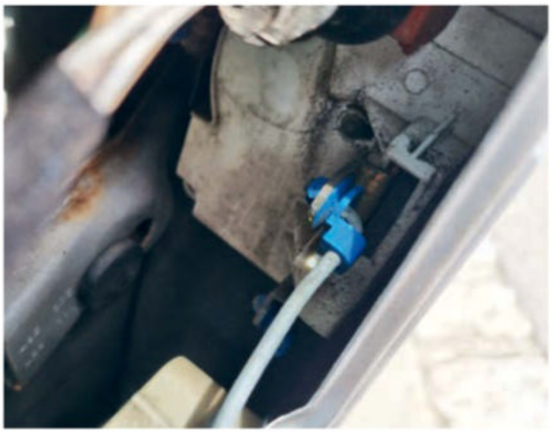


42 ◀ Replacement clips come with this white plastic clip that is designed to stop the glass dropping off the plastic lug on the regulator clip, but these aftermarket clips do not work very well and are extremely fiddly to reattach.



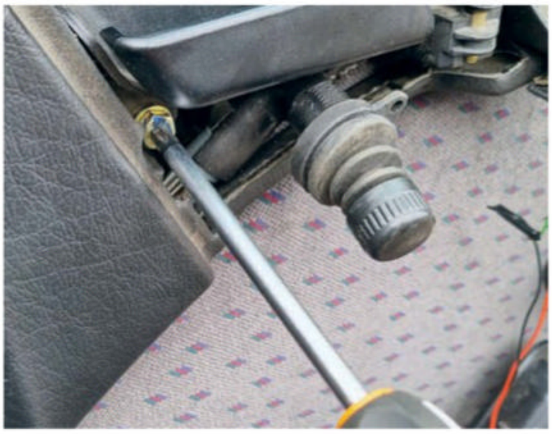
43 ◥ It's best to reuse the original OE style window securing clips if you can – the rubber grommet goes over the regulator lug and is securing by the metal clip. Again, they're fiddly to fit. You can find them on eBay for around £10.

44 ◀ Once you've got the glass secured, check it slides up and down easily on the support guides. It's a good idea to spray these with a dry lubricant such as Anti-Friction Dry PTFE. The window should now glide up and down with enthusiasm.

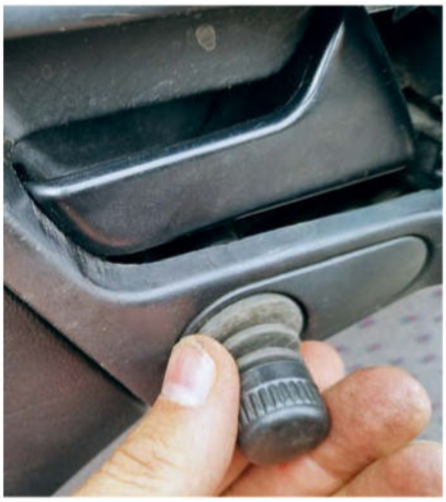


45 ▶ Reattach the doorcard by firstly refitting the lock wire into the blue plastic door latch clip and reattach the door speaker wires.

46 ◀ Hook the upper edge of the doorcard in place on the door frame and push it down.

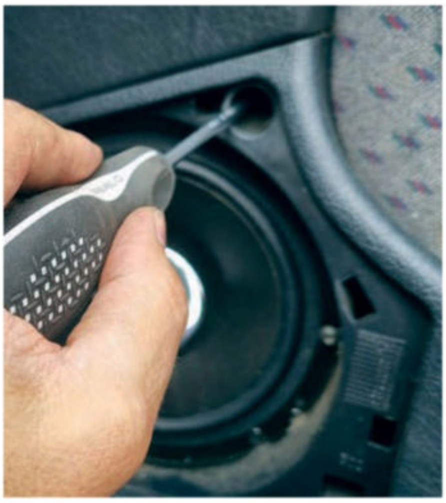


47 ▶ Making sure that the mirror adjuster is fed through the doorcard (it's easy to trap it behind) refit the Torx screws under the door handle, above the grab handle and the two hidden under the door pocket.



48 Make sure the rubber grommet on the RHD mirror adjuster is fed through the electric window switch bezel.

49 Then reclip the window switch bezel firmly in place and refit the small T10 Trox screw that secures the lower edge in place.



50 Finally refit the T20 Torx screw located above the speaker housing and reclip the speaker cover in place.

Vauxhall ROCKER COVER & VENT VALVE RENEWAL

The febi 49614 rocker cover.

A rough idle and smoke from the exhaust can point to a failing Positive Crankcase Ventilation (PCV) valve. **Martyn Knowles** investigates further.

You may remember the story of my Vauxhall Astra J driving experience in my December 2024 *Editorial*, where the 1.6-litre 4-cylinder naturally-aspirated engine decided to send plumes of oily smoke out of the exhaust at 50mph. It wasn't a constant stream of smoke, just an occasional one-off blast filling the whole road behind.

Smoke appeared to exit the exhaust on three occasions on my trip – it could well have been more, but it went dark before I arrived home. No fault codes were stored in the engine ECU.

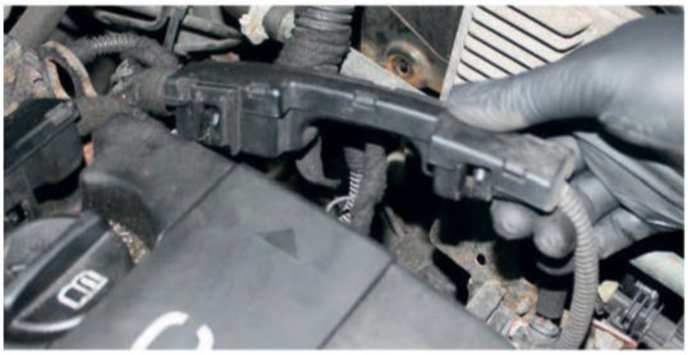
Thanks to the handful of *CM* readers who messaged me to suggest I look in the direction of the Positive Crankcase Ventilation (PCV) valve. Which made sense to me as to get irregular thick smoke like that from a running engine, points to either head gasket failure or a breather issue.

To determine if the PCV valve is at fault, there's a couple of things you can do. With an idling engine, try undoing the engine oil filler cap – if there's huge resistance in doing so, that points to excessive internal pressure. Our oil filler cap wasn't overly tight to undo, so the next check was to remove the cover over the coil pack in the centre of the rocker cover. Once removed, I could hear a rush of air that didn't sound correct.

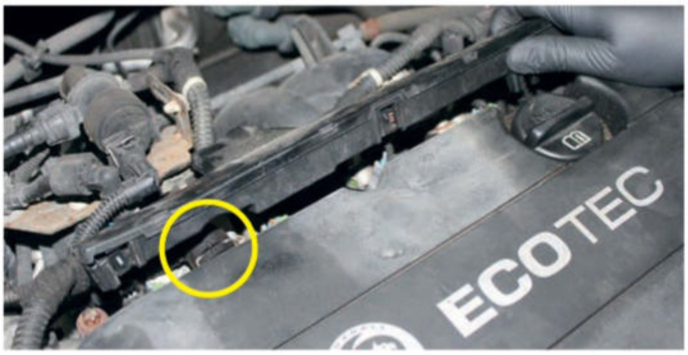
Fortunately, the bilstein group sells a new replacement rocker cover which includes the PCV in it's design (as OE). If you remember when we ran this Astra J as a project car in 2022, Rob Hawkins had trouble undoing the securing bolts for the rocker cover when he went to remove them to renew the timing belt. He had to resort to heat to undo two of them as they were so rusty they couldn't be undone with a ratchet and socket. The febi product conveniently comes with 11 shiny new E10 bolts and a fitted gasket to the plastic rocker cover. febi market its **49614** product as a rocker cover with vent valve and gasket. Some may say it's now referred to these days as a cam cover, but I still like the old-school name. The product comes with a 3-year manufacturer guarantee.

If you are able to undo the 11 E10 bolts without too much trouble, the job of renewing the rocker cover with the vent valve should take you about an hour. The price of the new part varies but I found www.partsinmotion.co.uk had the best price at £55.73 (incl 2nd class delivery).

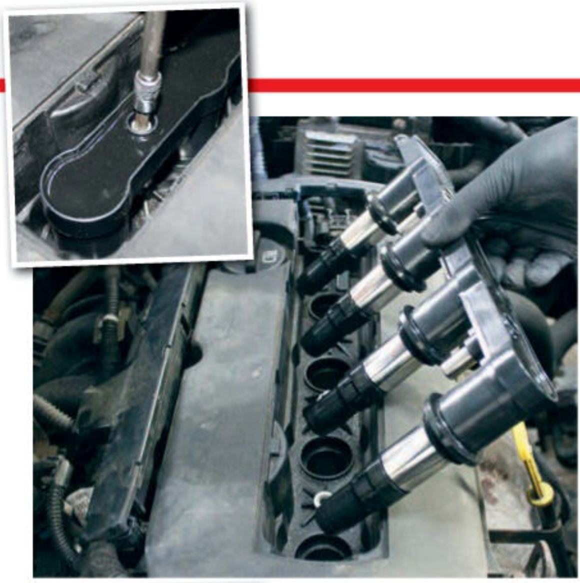
With the job completed, the engine oil and filter were renewed too. With the 1.6-litre engine fired into life, I immediately could tell the engine was running much happier. After a long test run, I'm pleased to say the rough idle and any sign of smoke from the exhaust has disappeared.



1 **To start we need to clear a few things from the sides of the rocker cover. First unclip this wiring harness from the right side near the oil filler cap and push it as far away from the working area as possible.**

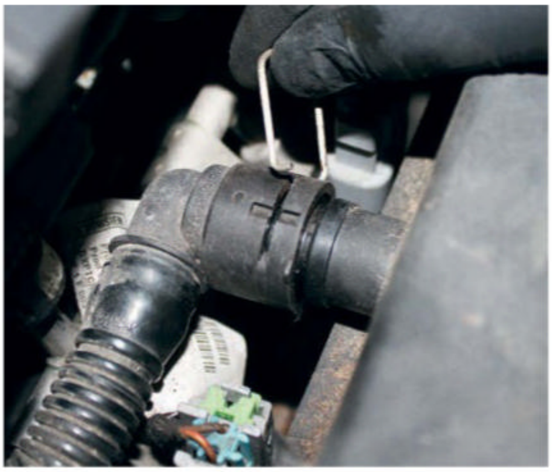


2 **There's another longer wiring harness on the back of the rocker cover. Unclip this and move it back towards the bulkhead as much as you can. You can just see (circled) the PCV locating hose.**



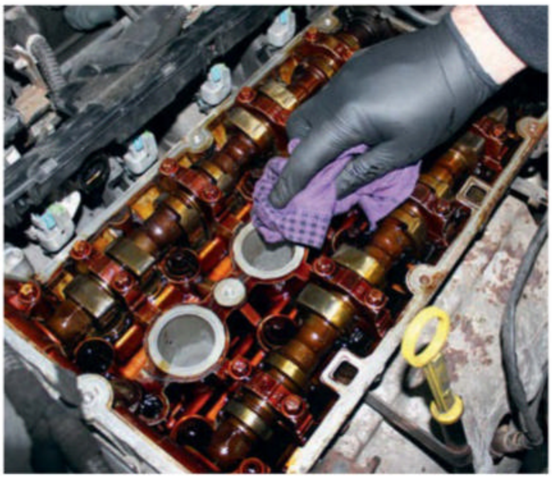
3 ◀ The coil pack has two T40 screws. Undo both and then unclip the wiring connection on the end of the coil pack. Place the unit in a safe place. The spark plugs remain in situ.

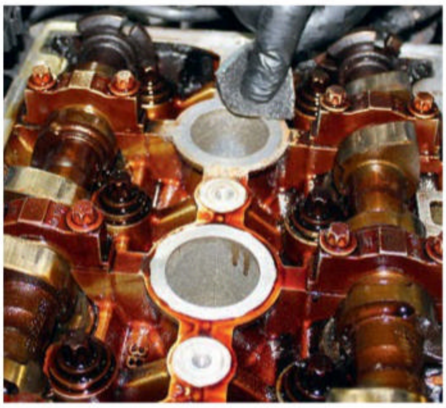
4 ▶ On the back of the rocker cover is this crankcase ventilation breather. It feeds into the PCV valve within the cover. There's a metal retaining clip to prise out first before it can be slipped off.



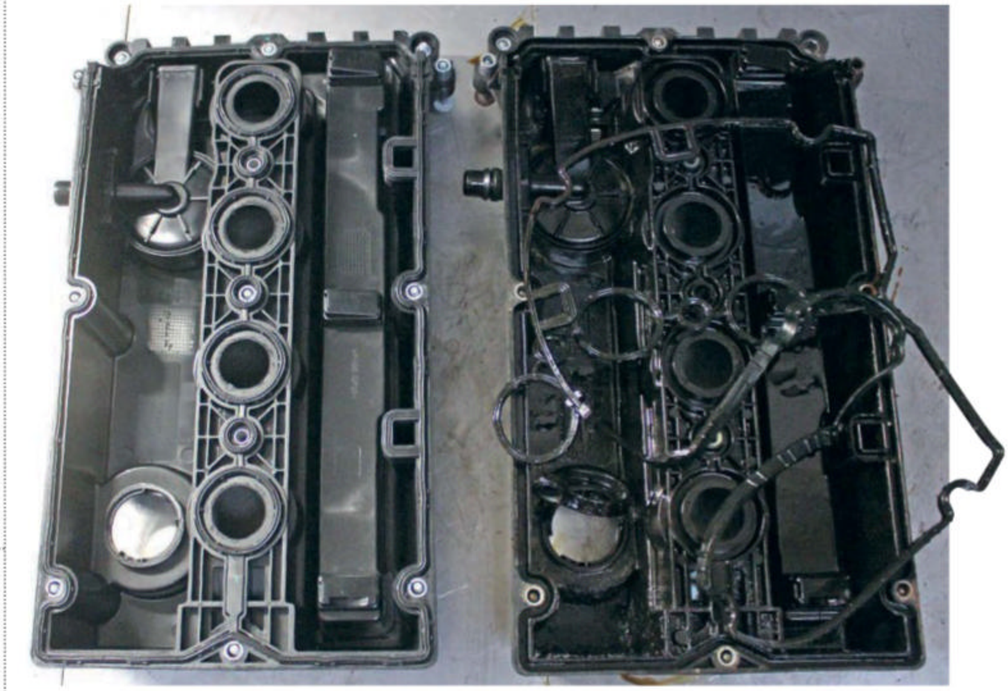
5 ◀ Now to tackle the E10 cover bolts. Progressively undo them, starting on the outside. With each bolt cracked-off, we used a Ryobi 3/8in cordless ratchet wrench to quicken up the unwinding.

6 ▶ With the holding bolts undone, we had a bit of a struggle at first prising the rocker cover from the head. With a bit of brute force in an appropriate area, it started to lift and then was free. We used a clean rag to wipe off oil residue from the surfaces where the gasket sits.

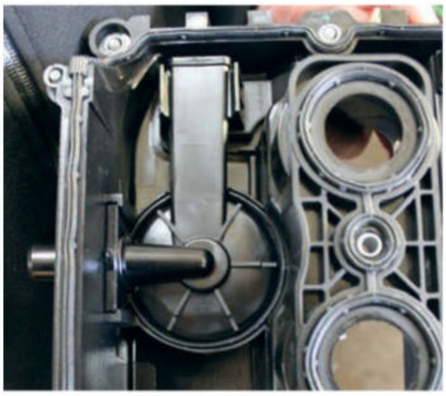




7 We then went around carefully with a small piece of emery cloth to get a spotlessly clean surface where the new gasket sits. The edges usually have more crud to remove than these centre surfaces.



8 The new febi rocker cover against the original Vauxhall part. I would say if you own a Vauxhall with this setup, renew the rocker cover at around 100,000 miles. It will not only give you nice new holding bolts but the original PCV valve will be clogged up at this mileage – with the danger of failure, like we had here. Plus a new fitted gasket will stop any oil leaks. Tighten each E10 bolt progressively, starting outside, then centre, then centre out to 8Nm.



9 ◀ Here's the location of the PCV valve on the cover. It's job is to recycle crankcase gases back into the inlet system. As our car's indicated 'oil life' was showing just 8% on the dashboard, we decided to give the engine fresh oil and filter. Once the engine was run, we checked for leaks around our new rocker cover. All was good. And the engine immediately sounded healthier.

Ian Cushway searches out **new** and **used** parts prices

smart forfour

The easy to park, cheap to run and funky looking second generation forfour is the smart choice for those in search of a city car with soul.

Our cramped UK cities tend to preclude bigger cars these days, not least because finding a space big enough to park or negotiating tight multi-stories has become such a stressful experience. Well, not in one of these little smarts.

The one we're talking about here is the chic and fashionable looking second generation W453 forfour introduced in 2014 – the four-seater stablemate of the fortwo. Much of its components are borrowed from the equally convention-busting third generation Renault Twingo, including its engine which, like the Twingo, is located under the boot floor and drives the rear wheels. The fact it's at the back means the smart turns like a London taxicab making parking in even the most miniscule places a doddle.

Given the fact it's a dinky 3525mm long, half a metre shorter than a Fiesta, it's surprisingly spacious inside. A bit like the Tardis, as one owner described it. That said, headroom in the rear is a tad limited for tall rear passengers, and there's only two seats with a large centre console, so it's strictly a four-seater. However, the rear seating is rather ingenious; the seat backs can be folded flat to liberate an impressive 975-litres or alternatively the bases can be flipped to carry taller items. There's storage under the seat bases and the front passenger seat back folds flat, too, so if you want to carry a length of wood (you've got up to 2.12m), or take a quick nap, you're in luck. With the seats in place, the boot capacity is 185-litres which is less than its rivals, but there's no lip and because the engine's tilted there's no intrusions. One practicality worthy of mention is the wide opening rear passenger doors, making rear seat access super easy.

Engine-wise, there were just two small, three-cylinder petrol offerings – a 1.0-litre non-turbo and a 0.9-litre with a turbo. Both feel energetic, though the former tends to run out of puff on fast motorways. A body-kitted Brabus version arrived in September 2016 and featured a more powerful version of the 0.9 turbo engine as well as a stiffer suspension, a more sportily tuned power steering and the Twinamatic auto with a race-start function.

Despite its diminutive size, the forfour

What model?

▶ Spec is good and even the lowly Passion boasted 15in alloys, multi-function steering wheel, remote central locking and believe it or not, climate control. The Prime adds twin sunroofs which lights up the interior, heated leather front seats and lane keep assist. Go one up to the range-topping Proxy and you'll be treated to 16in alloys, a 10mm lower suspension and a few extra trim details. There were various other option packs so with over 40 different colour combinations for the main bodywork, so you're unlikely to find two cars the same.

Engine wise, we'd recommend the turbo – it's just more rewarding to drive than the non-turbo version and hardly any more expensive to run. The Brabus will appeal to the collectors but in our view not worth the premium it commands.

Engine component prices

OIL FILTER
Main dealer £14.04
Independent from £6.89

TURBO ACTUATOR
Main dealer £206.40
Independent from £209.94

CAMSHAFT POSITION SENSOR
Main dealer £114
Independent from £59.99

doesn't compromise when it comes to safety, coming equipped with front, side and curtain airbags as well as traction and stability control as standard.

Living with the smart will be easy, with everything in the cabin falling nicely to hand. Bright and cheerful fabrics make you instantly feel upbeat and it's nice to drive, too, with little in the way of body roll despite its tall stance.

As for reliability and parts, read on to find out more. Incidentally, factory parts from Mercedes dealerships come from the MBUK warehouse (European Logistics Centre) in Milton Keynes – there's a two working day lead time.

Engines

Those Renault engines are generally strong and trouble-free and given that most will have spent their life in the town rather than on a motorway, few will have covered big mileages.

forfour uses the same three-cylinder engines that are found in the third generation Twingo. The 0.9 turbo version gets our vote.

smart
453 MBC

Brake component prices

FRONT BRAKE DISCS (PAIR)
Main dealer £170.40
Independent from £52.98

FRONT BRAKE PADS
Main dealer £76.80
Independent from £28.49

Steering/suspension component prices

FRONT SHOCK ABSORBER
Main dealer £165.60
Independent from £148.99

FRONT ANTI-ROLL BAR BUSH (SOLD WITH BAR)
Main dealer £84
Independent from £24.58

What to pay

▶ Relatively expensive new, smart forfour prices have dipped considerably since the model went off sale in 2019. The starting price is £3000, which will buy an early example in Passion trim. An early Prime will be roughly £500 more. You'll need between £5000-£6000 to acquire a Proxy with the Night Sky twin sunroofs. There's no significant price difference between the turbo and non-turbo models. The cheapest Brabus we found online (a 2017 in Sport spec with 69,000 miles) was £6590.

The service interval is every 12 months or 12,000 miles, whichever comes first – the turbo takes 4.3 litres and the non-turbo 3.5 litres and you'll need a 5W-40 that conforms to MB229.5 or the relevant Renault standards.

The engine employs a timing chain, so there's no need to worry about belt change intervals although on cars that have clocked up higher mileage where the servicing's been missed there's the possibility of chain stretch, causing a rattle and difficulty starting. However, with a car that's reluctant to fire into life it's worth replacing the cam position sensor before stripping the engine and buying a new chain – it's at the top of the engine so access is good.

Other than that, being so relatively new we struggled to find anything to report regarding reliability niggles, though VVT solenoid failure on the turbo is common, resulting in rough idle. Also, water ingress into the turbo actuator can ruin performance and result in the car going into limp-home mode.

Incidentally, the coolant, brake fluid and battery are located under the front bonnet.

Most forfours came with the five-speed manual transmission, though there was also the option of a Twinamatic six-speed dual clutch auto (DCT) which is slower

Running costs

▶ Unsurprisingly, economy from both the turbo and non-turbo engines is good with mid-50s MPG easily attainable. Road fund duty is free for cars registered prior to 1 April 2017, otherwise it's £190 a year.

Meanwhile, most models will be cheap to insure as many 1.0s fall into Group 2, while the turbo is usually classed as Group 8. Even the sportier Brabus is only Group 10.

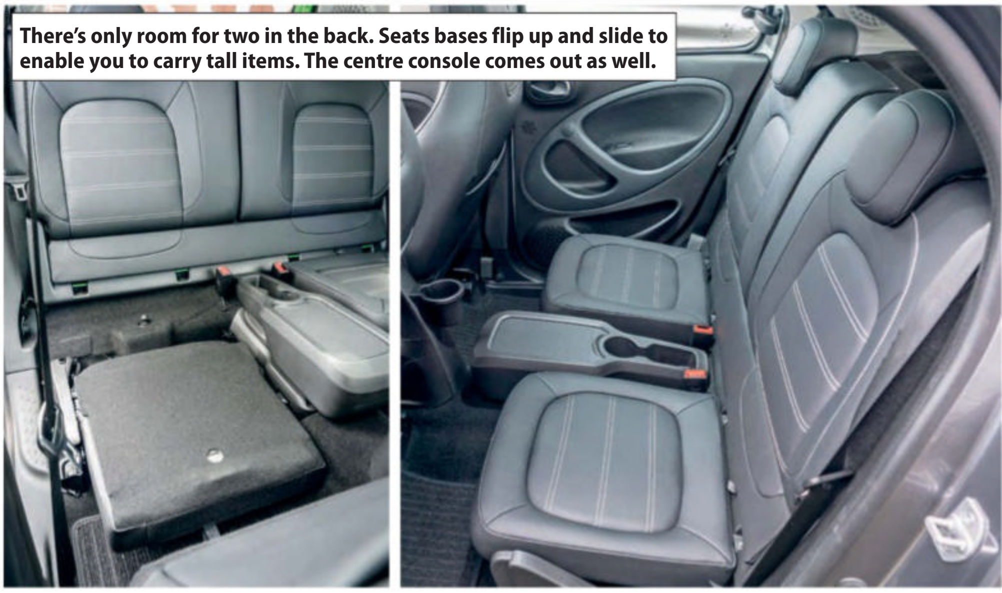
Boot expands to a whopping 975-litres with the rear seats folded flat. The forfour's party trick is the passenger seat back folds flat, too.

Other component prices

FOUR-WHEEL LASER ALIGNMENT CHECK
From £70-£75

HEADLAMP
Main dealer £289.99
Independent from £190
Second-hand from £109

This photo doesn't do the smart justice; the majority are far more vibrant than this!



There's only room for two in the back. Seats bases flip up and slide to enable you to carry tall items. The centre console comes out as well.

USEFUL CONTACTS

Bilstein	bilstein.com/en
Charles Trent	trents.co.uk
Evilution	evolution.co.uk
Smart Tune Ltd	smarttune.co.uk
SmartKits SKs	smartkits.eu

and a little jerky at lows speeds but suits the city centre environment. Both appear reliable, though if a manual car creeps forward with the clutch depressed, suspect a clutch master cylinder issue – fluid seeps past the seals.

Suspension/steering

The smart's suspension soaks up bumps in the road with ease, although given the location of the engine the steering can feel a little vague at times.

Apart from the usual bush wear, check the shocks as these can leak. The rears on the Brabus seem particularly prone. Beware of uneven tyre wear, too; the geometry can easily be put out of kilter due to kerbing.

Brakes

There are discs up front and drums at the back of the smart and the setup works perfectly well. There's a rear disc conversion available online but why bother? Mercedes main dealer prices are reasonably competitive but if you shop around at the national independents, you'll realise the smart really isn't an expensive car to run.

Other issues

Because it's likely to spend most of its time in urban areas, the smart's likely to be showing a few bodywork scars, and those bumpers are big – so look for scuffs and cracks. Kerbing's likely to be an issue too, so check the alloys – and the steering alignment via a four-wheel laser check if the wheel's suffered a heavy blow.

Apart from that, buy with confidence.

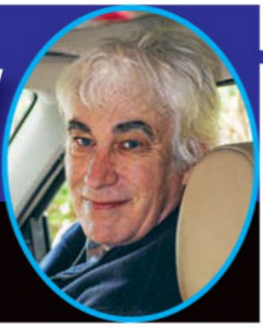
smart forfour
2014-2021

Model	0.9	1.0	Brabus
Engine (cc)	898	999	898
Power (bhp)	88	70	107
0-60mph (secs)	10.8	15.4	10.2
Top speed (mph)	102	94	112
Average fuel (mpg)	52	54	61

Verdict

▶ Versatility, character and the fact it's just a bit different. These are the reasons to buy a forfour. Yes, there's probably better deals out there on the Twingo III, VW up! and Toyota Aygo which are all likely to be cheaper, but if you're into neat design details – then the smart wins every time.

Dealer's Diary



Peter Simpson provides us with an insight into the automotive sales trading world – and beyond.

The Treasury step in!

The latest twist in the long-running motor finance scandal is that the government has got involved in the court case. Intervention by official bodies in Supreme Court cases is rare, though not unknown, and is allowed, quite specifically, under the Supreme Court's rules.

The case, for those who haven't been following it, centres on a court of appeal decision in a case bought by three consumers, who claimed the law entitled them to know not only that dealer's received commission for the sale of finance but also how much. To the surprise of many, on October 24 the Court of Appeal ruled in favour of the claimants – a decision which led to dealer finance being pretty-much unobtainable for the next month or so, while providers sorted new paperwork.

One of the firms involved, Close Brothers, subsequently appealed to the Supreme Court which is, as the name implies, the final arbiter. However, it's understood that Chancellor of the Exchequer Rachel Reeves has made a submission to the court requesting that, if Close Bothers appeal is rejected and the changes remain, any response in terms of compensation should be "proportionate to the loss actually suffered by the consumer and not conferring a windfall."

The fear is that because one of the claims dates to 2014, lots of people might be encouraged to make huge claims, the costs of meeting which could, again in the words of the intervention, have "the potential to cause considerable economic harm and could impact the availability and cost of motor finance for consumers". The latter is a legitimate concern, given that 80% of people buying a new car, and significant numbers of used car buyers, do so on finance. Several overseas-based providers including Santander are said to be considering withdrawing from the UK if this case results in huge compensation payments and/or uncertainty.

I get why this is needed. It certainly isn't political. I'm sure that the Conservatives would have done exactly the same. I also don't see it as a case of government backing banks against consumers – anyone who has a genuine claim will, I'm sure, still be able to make it and receive what they are entitled to.

Rather, it's a move to calm down and smooth out a potentially volatile situation where, if the banks and finance providers are forced to pay millions in compensation going back ages, Britain's reputation in the financial world will be harmed enormously. Ultimately, the cost of meeting compensation claims can only come from increased costs for current customers. And if some providers decide the uncertainty isn't worth the risk and pull out, that will reduce competition which again is likely to raise rates across the board.

The fake report scam

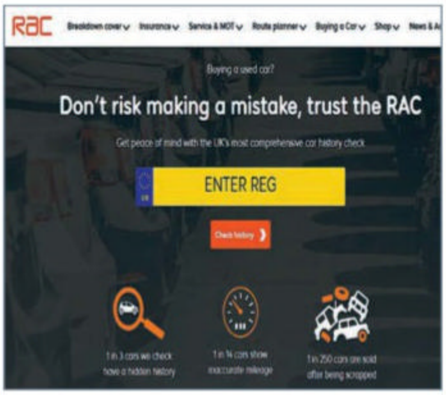
The latest scam that's doing the rounds is very sneaky and involves a fake condition report. As always, there are various detail variations, but the basic *modus operandi* is as follows:

A potential customer contacts you, seems keen, and may even soften you up a bit by saying things that suggest the car is exactly what they want, and they are ready to buy immediately.

Then comes the clever bit. They ask you to obtain a 'report' on the vehicle, using a supplier they nominate, saying something like "that is the only one I trust". It will probably be one that you've never heard of. Alternatively, it may be a slight but subtle variation or mis-spelling of one of the household name report providers such as Equifax.

A third variation is a website address ending .VIN – this makes it look like it refers to the vehicle identification number. However .VIN website addresses are intended for use by the wine industry (vin is French for wine). But you don't actually have to be in the wine industry to obtain a .VIN website – anyone can do it. However it is presented, it's fake.

What happens next varies. Sometimes the fake website will be linked to one of the free sources of information and charge you a hefty sum for information that's readily available elsewhere for nothing. Sometimes your card will be charged, and you'll get nothing at all. But in most cases the scammers will use your card details for all manner of fraudulent transactions including emptying your bank account, taking out loans in your name, and worse.



Buying a used car?

Don't risk making a mistake, trust the RAC

Get peace of mind with the UK's most comprehensive car history check

1 in 3 cars we check have a hidden history

1 in 14 cars show inaccurate mileage

1 in 250 cars are sold after being scrapped

The latest car buying scam revolves around fake condition reports – always use legitimate sources such as the RAC, and if a potential buyer wants you to pay for a specific one you haven't heard of before they view, then chances are it's a scam.

This is definitely one to watch for. If a buyer requests a history report from a specific site, ask them why they want you to use that one, and maybe suggest that they obtain a report themselves. In most cases they'll either provide a 'bovine excrement' reason, or simply not respond at all. Sometimes they might try exerting pressure; "you must have something to hide"; I've even heard of a case where a scammer said they would report a seller "for selling stolen goods" if they don't supply the report.

Don't be blackmailed – if a buyer wants to choose where a report comes from, they should pay. And if they won't, it's a sure-fire sign that a scammer's at work.

Volkswagen drop agency sales plan

▶ VW have dropped, "for the short to medium-term" their plans to switch to direct agency sales and will instead remain with the wholesale model where dealers buy their stock from VW, own it, and can sell it for whatever they wish. Under agency arrangements, consumers buy cars direct from the manufacturer, and while the main dealer may take the order and always receives, PDI's and hands over the car, they do this for a fixed agency handling fee from the manufacturer.

There is therefore no possibility of buyers negotiating discounts or similar, and it's also harder/more complex for dealers to pre-register cars and sell them as nearly new, again at lower prices.

Industry sources have been expecting this announcement for some time. Official confirmation came via a notification to dealer partners on January 22. It read thus:

"Following discussions with brand investor councils from Volkswagen, Volkswagen Commercial Vehicles, Audi and Skoda in the UK, we have reached a decision and issued a notification to our retailer partners today.

"This states our intention to pause 'Direct to Customer' retail battery electric vehicle sales for the short- to medium-term and return to the wholesale model.

"The change would then apply to BEV orders from April 1 for Volkswagen, Volkswagen Commercial Vehicles and Audi, and February 20 for Skoda.

"Retail BEV Agency will continue for Cupra as the forerunner brand for agency since inception; there is no change or review planned for fleet agency; and full agency for all vehicles and drivetrains will be established in the Swedish and Irish markets."

The only major manufacturers currently using the agency sales model in the UK are Honda, Mercedes-Benz, Tesla and Volvo. The Stellantis brands (Abarth, Alfa Romeo, Citroën, DS, Fiat, Jeep, Peugeot and Vauxhall) are still saying they will switch to agency "no earlier than late 2026" – whether this happens remains to be seen. Jaguar Land-Rover is, of course, going through massive changes at present but have now decided these will not include agency sales. Many other popular brands including Hyundai, Kia, Mazda, MG, Nissan, Renault, Suzuki and Toyota have either ruled agency sales out completely or said it is not a short or medium-term objective.

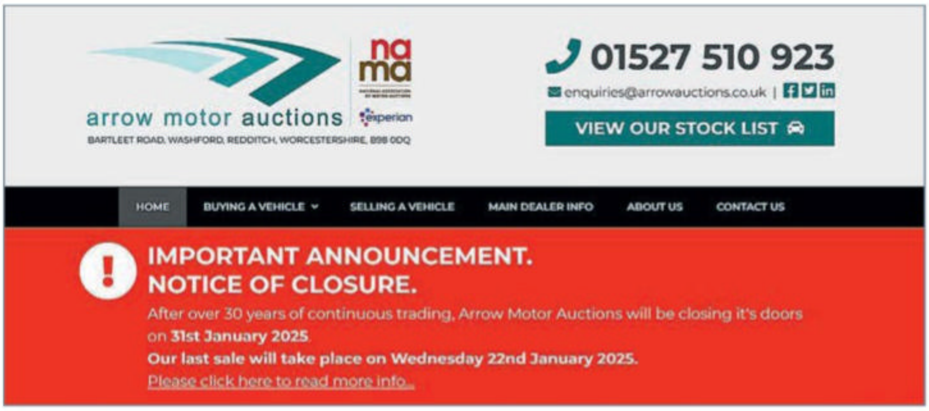
Auction scene news

▶ In recent weeks there have been a few changes around the UK auction scene.

Firstly, Arrow Motor Auctions, a well-regarded independent based in Redditch, have closed – the last sale was held on January 22. Arrow had been trading for over 30 years, and over the years had sold vehicles on behalf of main dealers, local authorities, finance companies, liquidators and bailiffs, alongside the usual trade and private entries. Their approach was also refreshingly old-school – physical sales where cars can actually be viewed, everything sold as seen, realistic buyer's premiums and any type of vehicle sold. No reason was given for the closure.

Meanwhile, at the other end of the size-scale, British Car Auctions have had a 'win some lose some' couple of months. Firstly, though it has not been officially confirmed, BCA seem to have lost some of their contract with Lookers to Manheim. At one time Lookers were a major part-ex client for BCA – indeed I bought scores of Lookers cars there myself. However, no Lookers stock at all is currently (January 25) listed by BCA, but Manheim have at least 197…

It's not all bad news for BCA however, as late last year they announced that they had retained the main dealer part-exchange contract with TC Harrison, one of Britain's largest privately-owned Ford main dealerships. They have branches in Huntingdon, Peterborough, Stamford, Spalding and St Neots in Cambridgeshire/Lincolnshire, Derby and Burton on Trent in Derbyshire. In normal circumstances retention of a contract of this kind probably wouldn't be that significant, but in this case the cars went through BCA Derby and Peterborough. Both of which were very close to the main regional TC Harrison branches – indeed, a delivery driver taking a car from TCH Peterborough to BCA Peterborough could have walked back in 15 minutes. However, both these branches have now closed, and all TCH cars are going through Nottingham instead…



IMPORTANT ANNOUNCEMENT.
NOTICE OF CLOSURE.

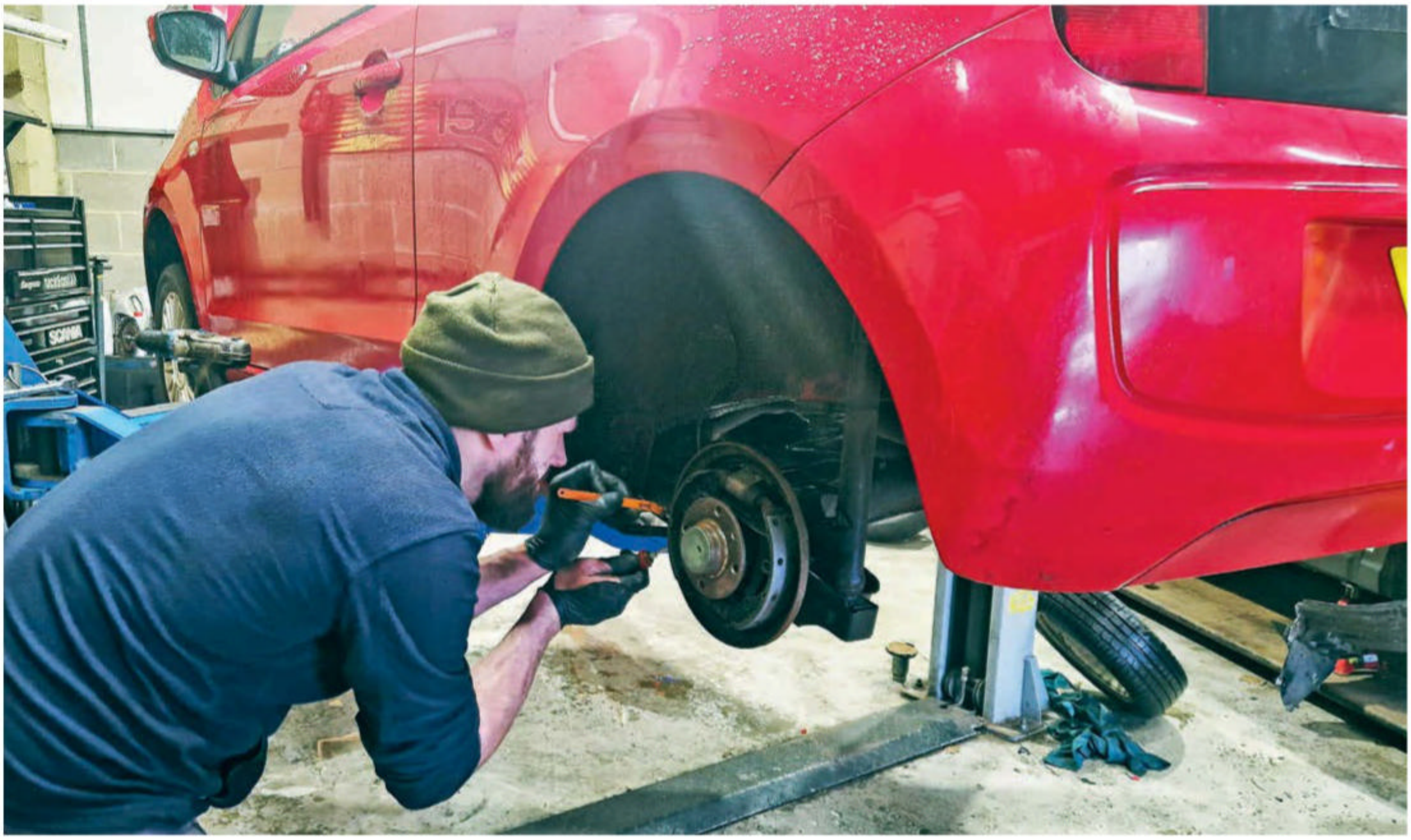
After over 30 years of continuous trading, Arrow Motor Auctions will be closing it's doors on **31st January 2025**.

Our last sale will take place on Wednesday 22nd January 2025.

Please click here to read more info...

Sticky brake REMEDY

Sticking rear brakes on the VW up! family are fairly common, but the cure is usually straightforward, as **Peter Simpson** explains.



Along with its SEAT and Skoda siblings, the VW up! is generally considered to be just about the best small car of its generation – well-made, fun to drive, low insurance and generally reliable.

Nothing, however, is 100% perfect, and one irritating issue with these cars seems to be gummed up rear brakes. This seems to be a particular problem on lightly-used city cars, especially those that are used fairly infrequently and/or in damp conditions.

There are usually two symptoms of this. The first is that the rear brakes stay on for a few yards when moving away from a cold start, something which can be 'encouraged' by pressing the brake pedal before moving, something many drivers consider good practice as a check that the brakes are working. Secondly, the parking brake can be reluctant to release – in extreme cases it sticks on solid. According to various online forums, some owners avoid this by not using the handbrake except when parking on a hill. That's hardly satisfactory – a parking brake that can't be used to secure a parked vehicle isn't fit for purpose!

Drum roll

The cause comes down to brake dust. Rather unusually nowadays, the up! family have drum rear brakes, and these seem especially efficient at retaining dust inside. Removing the drums for a cleanout at every service should help alleviate this, but it isn't on the service schedule. These days, few garages will add an extra job which the manufacturer doesn't require because the extra time will make their labour charge uncompetitive.

Anyway, the 2013 High up! that's joined the Simpson family fleet as my daughter's first car had a classic case of 'sticky brake syndrome', with the rear brakes holding on as the car moved off from stationary if it had been standing for more than two or three days. Though not mega-serious, this was irritating as each time the car moved, it left two rear-wheel skidmarks on our gravelled driveway. Which I then had to rake over.

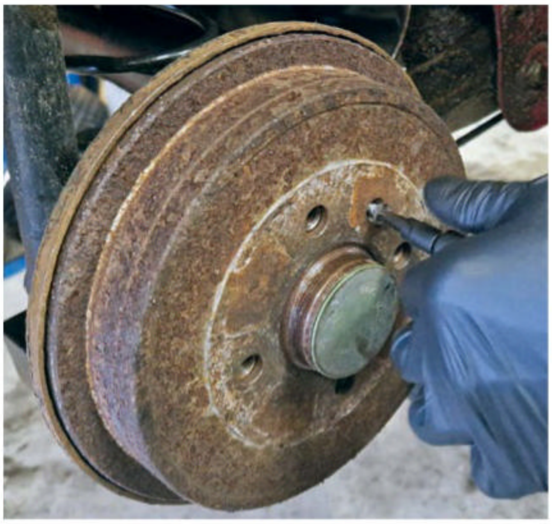
The photos show the key stages of the job with just a couple of additional points to note. Firstly, when cleaning the drum innards, make sure the ABS sensor and its ring on the back of the hub aren't contaminated by dirt. If so, it can cause the ABS warning light and, Traction Control light (if fitted) to come on. You may be able to guess how we found that out.

Secondly, if like us you have to slacken the handbrake cable to get the drums off, then assuming you haven't actually removed the shoes, all you should have to do to restore normal performance is to put the adjustment back to where it was before. In other words, you tighten it the exact-same number of turns as you slackened it.

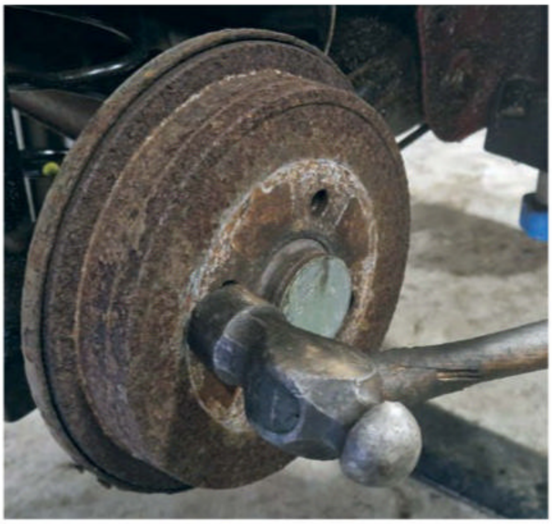
Then, with everything back together, the car on the ground and the engine running, press the brake pedal hard two or three times to rebalance the system and allow the self-adjusting system to operate. In 99% of cases this will restore normal performance. If not, reset the handbrake so that with the lever fully off the cable is totally off-tension but fully on by the third of 4th click of the lever.

I strongly recommend one slight deviation from the procedure shown here. For various reasons Craig Dawson doesn't use brake cleaner and instead blows the dirt away while wearing a face-mask and also taking other dust-containment precautions. In a DIY or semi-trade environment however, spray-on brake cleaner is much more efficient and very strongly recommended. It's also safer, as although asbestos in brake friction materials has been banned since 1999 and reputable manufacturers stopped using it from the late 1970s, it still isn't really something you want to be breathing in.

So do, please, use a spray brake cleaner. And only proper brake cleaner will do; conventional degreasers damage the friction lines and are a very definite no-no anywhere near brakes!

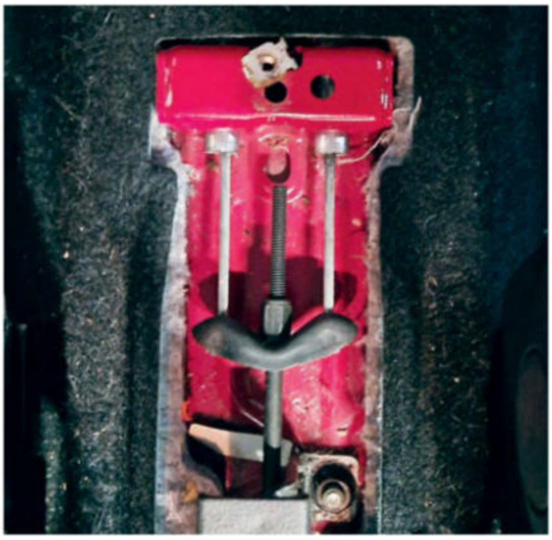


1 ◀ **In theory, brake drum removal – once you've got the car firmly up on axle stands and the wheel off, is simply a matter of undoing this small set-screw and then taking the drum off by pulling on each side.**

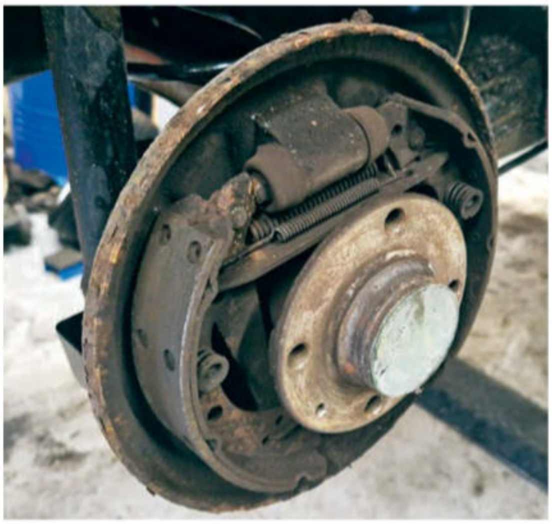


2 ▶ **In practice, it's likely to be stuck solid and in need of a few carefully-aimed blows from the 4lb 'coarse adjusting tool' to jolt it free. It will usually be held in the middle, but a few taps around the edge usually do it.**

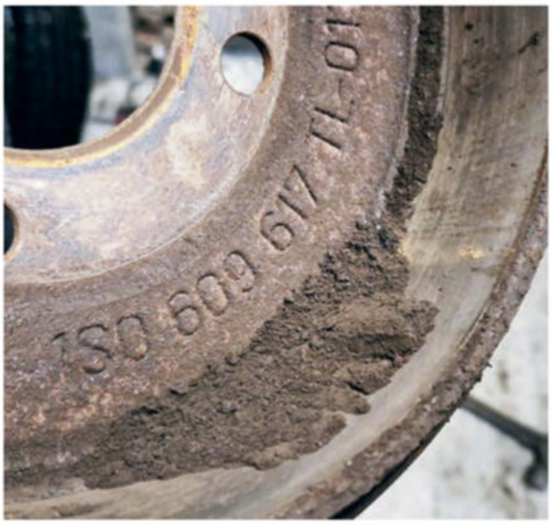
3 ◀ **Levering the drum off – yes, I know this is screwdriver-abuse, but in most workshops getting the job done is what matters most. In our case however the drum, though free, still wouldn't come right off.**



4 ▶ **Suspecting – correctly – that the problem was rust, Craig next slackened off the handbrake cable. This is under the centre console – count the turns so you can reset the handbrake in the same position.**



5 ◀ **With the drum removed, the basic cause of the problem was pretty obvious; brake dust, and a lot of it! The good news, however, was that everything seemed nice and dry, with no evidence of brake fluid leak.**

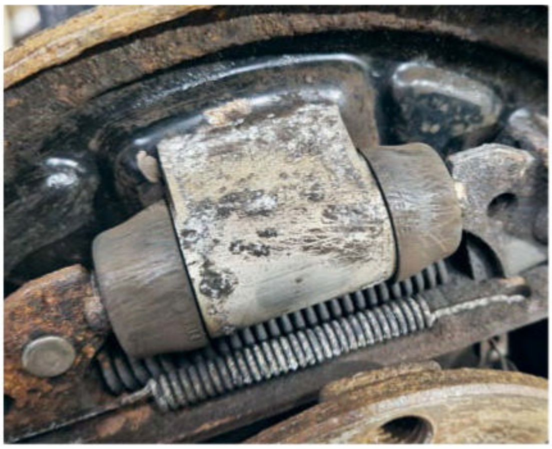


6 ▶ **There was even more dust inside the drum. Notice too the rusty lip around the inner edge, which was preventing the drum from coming off with the shoes held in position by the handbrake cable.**

⇨

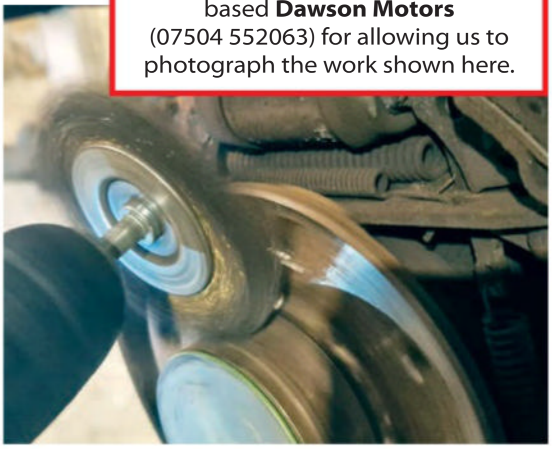
VW up! sticky rear brakes remedy

THANKS TO
Craig Dawson of Peterborough-based **Dawson Motors** (07504 552063) for allowing us to photograph the work shown here.



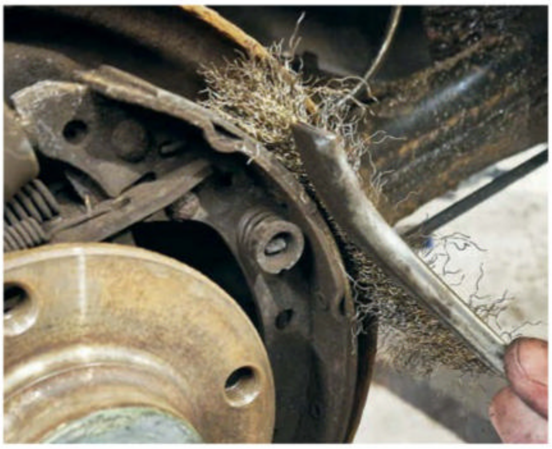
7 ◀ The double-piston rear wheel cylinder is fixed to the backplate, so both pistons, and thus both shoes, operate simultaneously. Ours was bone-dry with no evidence at all of fluid leaks – that's pretty usual these days.

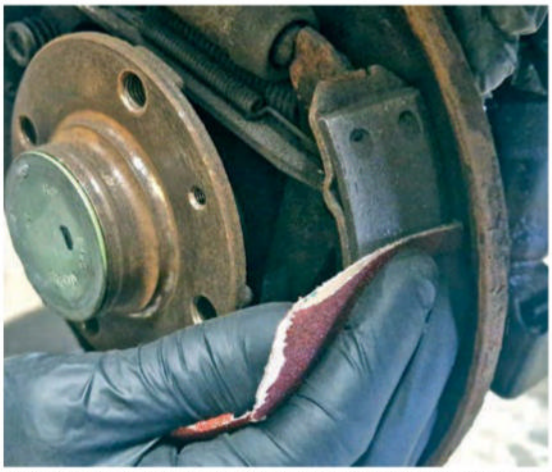
8 ▶ To prevent the drum from sticking again, Craig cleaned it of all surface corrosion, using a rotary brush. Get right into the centre, as a tiny bit of rust here can cause a massive amount of aggro!



9 ◀ As explained in the text, Craig blew the dust away using an airline. I, however, advise you to spray some aerosol brake cleaner on, and let it drip into a container underneath; an old washing-up bowl is ideal.

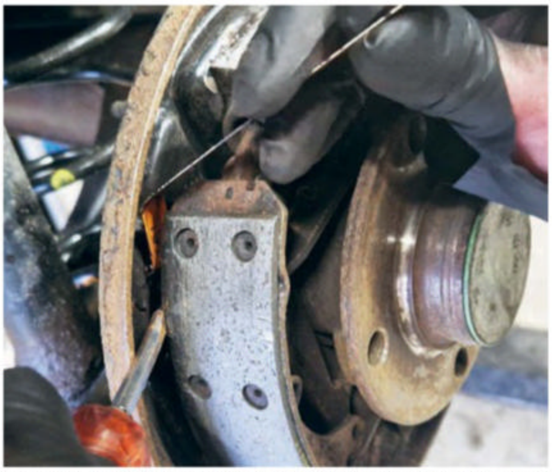
10 ▶ You'll also probably need to remove some deep and thick-encrusted gunge using a wire brush. Muck tends to build up around the back of the shoes. They are meant to slide on the backplate but can't, hence the sticking brakes.

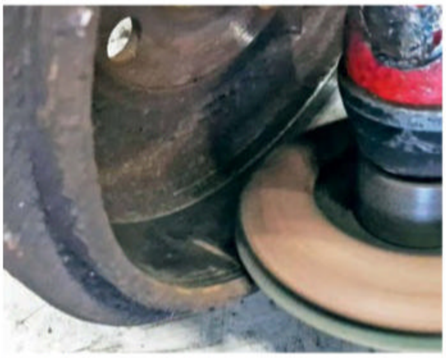




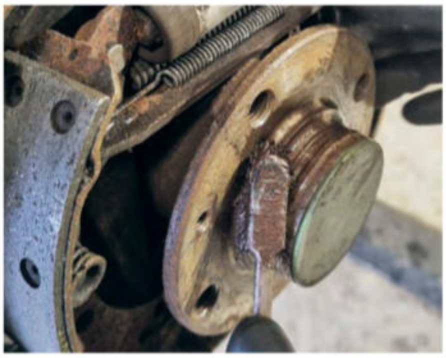
11 ◀ Our brake shoes were in good order throughout. They were, though, a bit smooth, so Craig used emery to rough the surface up a bit. Incidentally, reputable brake shoes and pads have been asbestos-free since the late 1970s.

12 ▶ Here's the clever way of preventing shoes from sticking in the future; lever the shoe away with a screwdriver, and then, using an old hacksaw blade that's been bent like this, apply a little copper grease where shoe and backplate touch.





13 As noted in the text, it's sensible to take the drums off as part of the annual service, so to make it easier next time, Craig ground the rust off. Note that the grinder is angled away from the drum friction surface, to avoid catching it accidentally.



14 Final job before putting the drum back on involves putting a bit more copper grease around the lip of the wheel bearing housing like this, to hopefully prevent the drum from sticking in future. Don't overdo it – this is all you need.

15 After refitting the wheel and wheelnuts just enough to grip, and with the car back on the ground, take the wheelnuts to the specified torque setting of 120Nm with clean but dry threads. Then reset the handbrake as explained in the text, and hopefully your sticky brakes will stick no more.

BOOK NOW FOR LOW-PRICE ADVANCE TICKETS!

NEW VENUE FOR 2025!

VOLKS WORLD SHOW 2025

23 March

South of England Showground

EMPI HEADLINE SPONSOR

TICKETS START FROM £20

THE UK'S BIGGEST & BEST VW SHOW

SUNDAY 23RD MARCH 2025

SOUTH OF ENGLAND SHOWGROUND

SAVE UP TO 50% ON TICKET PRICES

- FREE PARKING • KIDS GO FREE*
- RE-INTRODUCING CLUB DISPLAYS AND SPECIAL DISPLAYS

Powered by

VOLKS WORLD VWt Meguiar's HERITAGE PARTS CENTRE

SCAN ME!

BOOK ONLINE FOR THE BEST TICKET PRICES!

VOLKSWORLDSHOWS.COM

Terms &Conditions: *Children 14 years old and under, 4 kids maximum per paying aduly. Book online at www.volksworldshows.com. Advanced day tickets from £20. Camping: £30 per person. Children 14 and under camp for free. Booking fee applies. All attractions are subject to change. Advanced ticket booking closes Midnight Friday 15th March 2025 or earlier if availability is sold out. See website for all ticket prices, offers and full terms and conditions.

Tempting take-aways

Cheaper replacement parts stemming from Asian markets are becoming more widespread – but is this still something to fear asks **Alan Anderson**?

Those *CM* readers of a more mature age may well remember the dubious 'Made in Japan or Hong Kong' labels affixed to a wide variety of products during the 1950s-1970s, with a similar scepticism of Taiwan goods some 10-20 years later. Once cheap and cheerful albeit of questionable quality, nothing could be further than the truth from these countries these days. So, is it time China and India are also given a break?

Dodgy replacement parts have always been around in the motor trade and perhaps, with ever rising repair costs, always will be especially with such price variations on seemingly identical parts. Indeed, a recent survey commissioned by the government's Intellectual Property Office (IPO) found that one in six motorists said they have purchased a counterfeit part in the past 12 months – and shockingly over half those quizzed admit that they did so willingly, contributing to a growing black market which, in the UK, is said to be worth a cool £1billion each year.

However, there's a world of difference between dodgy counterfeit components and well-respected quality brands which are simply produced in countries such as China due to economic reasons.

Famous names

Several major well-respected names have set up manufacturing bases in China, such as, TRW Automotive and OSSCA, while Bosch has a foothold in both countries, having been producing OEM components for many car manufacturers in Asia, BMW being one of the most prominent, for many years.

Stats show that the Chinese automotive export market topped $75billion three years ago and India is fast catching up. According to one source (eletimes.com), India has also emerged as a prominent global force in part due to the country's low labour costs and being the world's second-largest steel producer.

"The Indian Auto Component industry is witnessing remarkable growth in its exports. Projections indicate that by 2026, these exports are anticipated to surge to an impressive $80 billion", it claims with the USA, Germany, the UK, Thailand, and Italy being the main markets".

The report goes on to claim that the Indian aftermarket export business, which chiefly comprises of battery, tyres and brake parts, is set for a massive growth and expected to top $32 billion by 2026 – a 300% increase since 2020.

Two standout Chinese parts suppliers boasting OEM credentials are Denso and OSSCA. The former was launched in 1949 and historically enjoys links with Bosch and Toyota and now serves the major carmakers globally. Worldwide, the company, valued at $45.1billion, has around 200 subsidiaries and claims inventing the platinum and iridium-tipped spark plugs; permanently engaged Stop-Start starter motor; flat-blade wipers – and apparently the QR code!

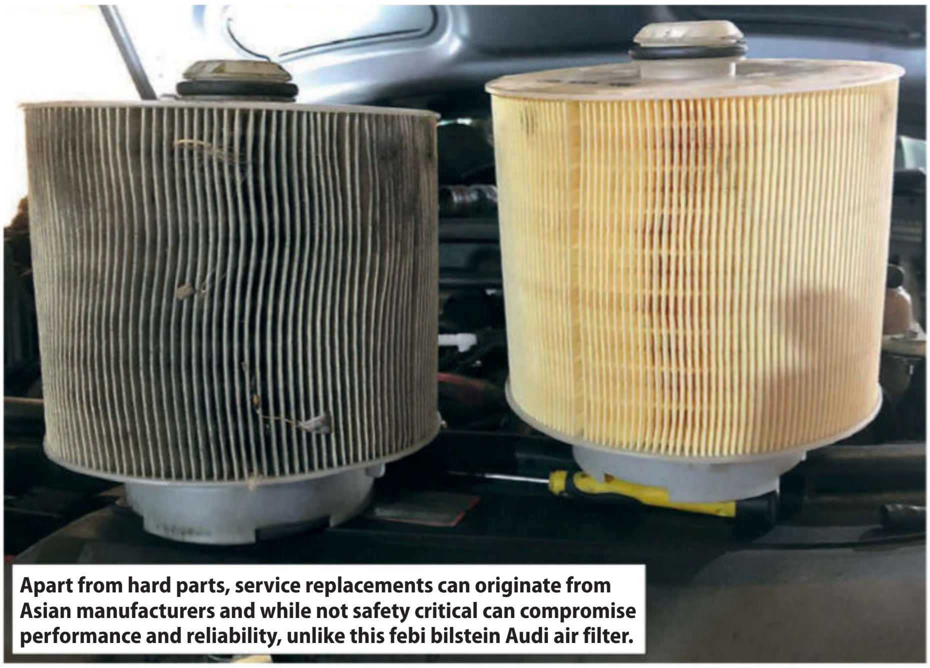
Both GSF and LKQ, retail parts sourced by Chinese suppliers and seemed rather reluctant to comment on the subject although both infer that so long as the quality is right and meets their respective standards, they have no qualms – and of course keeps prices competitive. "We have complete trust in them", simply says James Onions, GSF's marketing and communications director. Anthony McAteer, Group Procurement

DOT P2PM AM5C 1118

It's claimed a staggering 71% of all tyres sold in Europe now come from Chinese manufacturers with Korean and Indian made brands also gaining traction, especially at the budget end of the market.

Chassis components such as droplinks are increasingly finding shelf space in motor factors, perhaps unbranded. Check the name and whether it resembles the one fitted to the car.

Don't take chances on safety critical components, such as brakes, and always opt for a well-known brand such as febi bilstein, *CM*'s parts partner, even if it costs a bit more up front.



Apart from hard parts, service replacements can originate from Asian manufacturers and while not safety critical can compromise performance and reliability, unlike this febi bilstein Audi air filter.

and Category Director at LKQ Euro Car Parts feels they will increasingly play an important new role in helping secure competitively priced replacement spares for EV repairers.

"Developing affordable repair solutions is critical to the EV transition. Parts availability – OEM and aftermarket – is fundamental and so are skills and equipment: all areas in which we are leading the way. We have already developed a market-leading range of EV parts, subject to the same quality criteria as our core range, and it's growing all the time."

IAAF's view

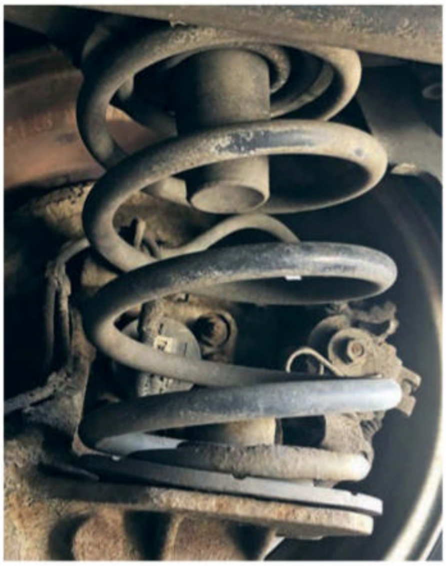
Yet despite all this, the stigma of using parts originating from Asia remains and The Independent Automotive Aftermarket Federation – the UK's trade association for vehicle parts manufacturers, importers and independent wholesale distributors and independent garages, formed in 1930 – is still deeply concerned about the flood of fake parts infiltrating the UK garage trade.

Having said that, the IAAF admits there's now a clear distinction between the good and the bad regarding quality and dependability.

"For at least the last 10 years, Chinese manufacturing has changed under the influence of western economy companies who control the design and manufacturing standards of their branded products which are being made in China. Apple iPhones are a good (consumer product) example. At the other end of the spectrum are very low-cost products which are not premium branded and principally sold on price. The quality and function of these parts are often suspect.

"The IAAF has been involved in the increasing issue of illegitimate and fake matching quality replacement parts. In particular, there is a growing issue of counterfeit parts, as well as parts which require to be type-approved, but although being marked and sold as being type-approved, when tested were clearly not to the required specifications," IAAF Chief Executive Mark Field comments.

He adds: "These parts should be of a good quality, as well as fitting and working correctly, but this is often not the case. The issue of selling products fraudulently, as well as the issue of warranty should the fake product not fit or work correctly, creates significant problems for both the workshop and the customer.



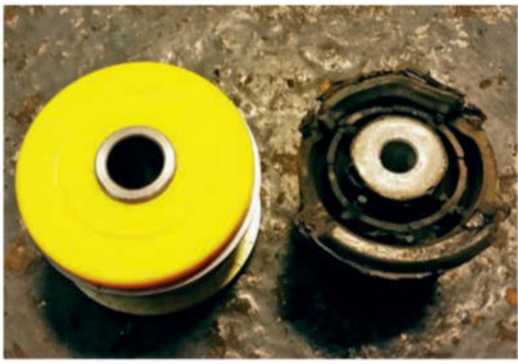
Coil spring replacements is one of the most frequent MOT failures meaning a buoyant repair market. However, the trade knows that cheap or counterfeit imports are poor quality and won't last long in service.

"There is also a wider issue of low-cost replacement parts simply sold on price, but which can cause significant issues when they fail to work correctly, such as oil filters or wiper blades. Low cost, often poor-quality replacement parts, satisfy the demand for the cheapest repair solution. The key issue is ensuring that only legitimate, quality replacement parts are sold and fitted to customer's vehicles.

"In support of this, the IAAF is working with its members and the UK's market surveillance unit to provide evidence of counterfeit products, as well as the revision of its Code of Conduct to help support its members to identify and supply only legitimate products".

Our view?

Perhaps it's now become a case of what you buy and not where you buy it from – but it's always wise to stick with reputable premium names when replacing safety critical components. And check the part carefully before fitting.



An often-copied part – reputable manufacturers colour code their products signifying whether they are standard or performance types but how can you be sure when buying spurious spares?

2018 Vauxhall Mokka X 1.4T

Supermini SUV

Rob Hawkins follows the servicing of a six-year-old FWD Mokka X at AES York.

THANKS TO
AES York Ltd
01904 780149
autoelectricsyork.co.uk

Overall difficulty rating

Vauxhall's answer to a compact sports utility vehicle (SUV) arrived in the form of the Mokka in 2012. Four years later and after sales had exceeded half a million, it underwent a facelift and was rebranded the Mokka X, which includes the model shown here being serviced. Some models offer all-wheel-drive, whereas ours is only front-wheel-drive and is powered by a 1364cc turbocharged petrol engine.

The second generation of the Mokka was launched in 2020 and at the time of writing it is still in production.

Under the steel exterior of the first-generation Mokka, there's a familiar saloon car layout, with MacPherson struts, lower arms and an anti-roll bar at the front, and a beam axle at the rear with separate telescopic dampers and coil springs. There are disc brakes all round.

The recommended servicing for the Mokka X shown here is seemingly straightforward and sparse, with engine oil and filter changes every year or 20,000 miles, whereas the air filter is every 40,000 miles or four years, along with the spark plugs.

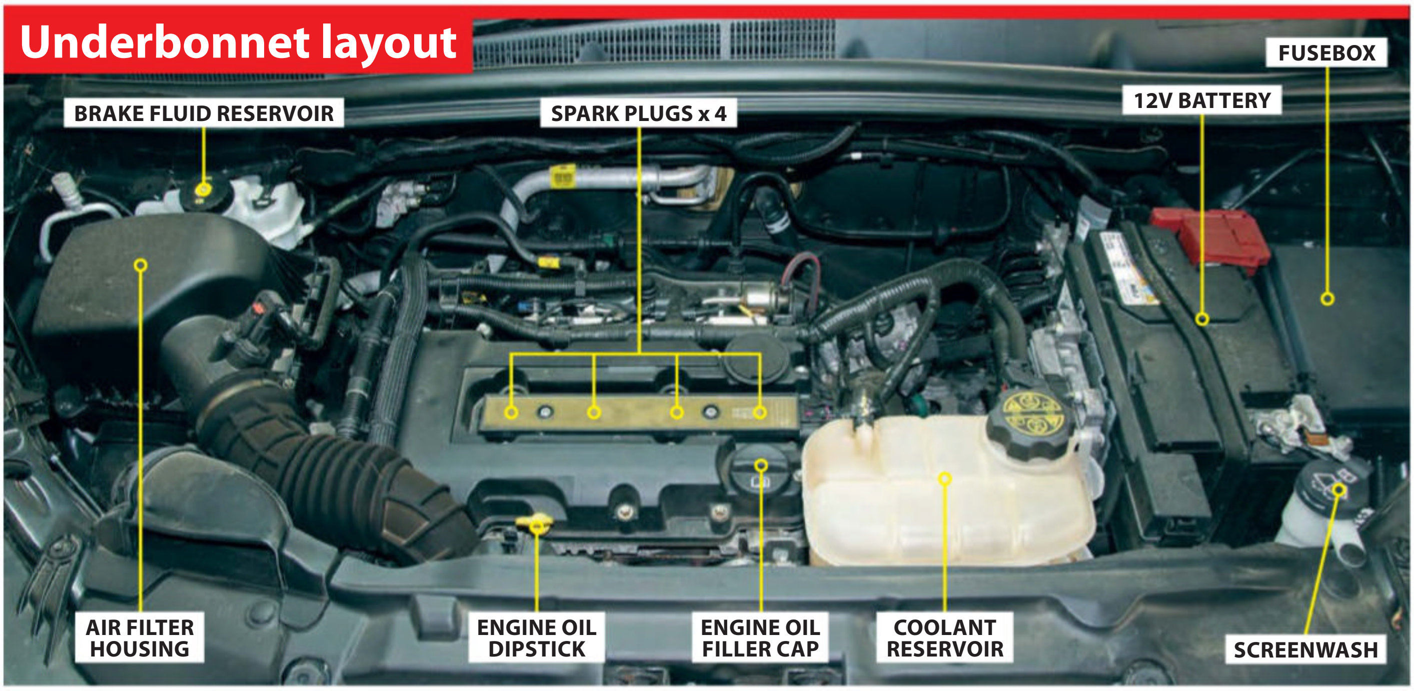
ESSENTIAL EQUIPMENT

- 24mm socket
- Torx T30 and T40 bits

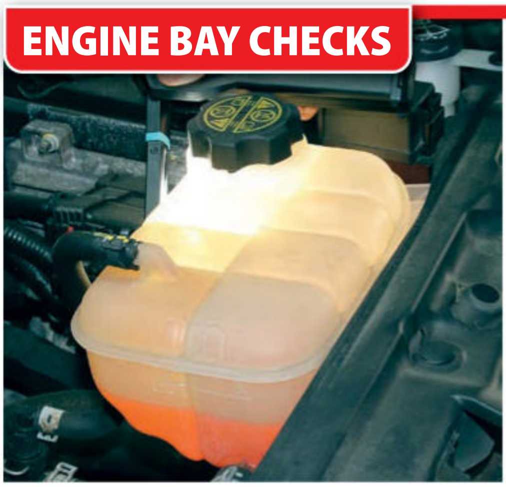
Rob says

With used Mokkas now for sale from below a couple of grand, servicing can easily be reduced to an annual oil change, so the four-yearly air filter and spark plugs may get missed, not to mention jobs such as changing the brake fluid every two years. If you're unsure of a vehicle's service history, my advice is to cover everything.

Underbonnet layout



ENGINE BAY CHECKS

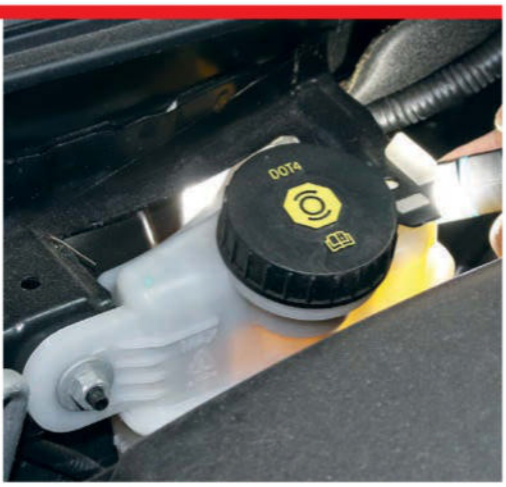


1 CHECK COOLANT LEVEL

Shine a torch on the side of the coolant reservoir in the front area of the engine bay. The level should be close to the MAX marker on the side. If you can't see the level, providing the engine is cold, unscrew the cap and look inside.

2 CHECK BRAKE FLUID

The brake fluid reservoir is on the offside of the engine bulkhead. Shine a torch on the side of it to check the level against a MAX marker. If you can't see the level, wipe around the cap before undoing it and looking inside.

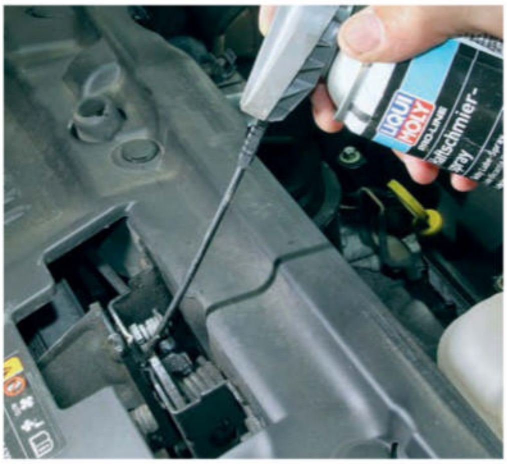


3 REFILL SCREENWASH

Top up the screenwash reservoir in the nearside front corner of the engine bay. Operate the windscreen wipers and washers to check their spray pattern and to look for blocked washer jets. Inspect all wiper blades for splits in their rubber.

4 LUBE LOCKS

Spray a light grease over the bonnet-locking mechanism in the middle of the slam panel to help keep it moving freely and to reduce the risk of it seizing. Spray more grease on to the hinges and the check straps for the doors.

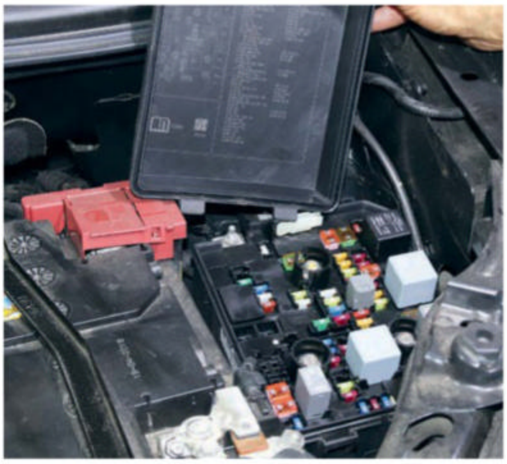


5 TEST BATTERY

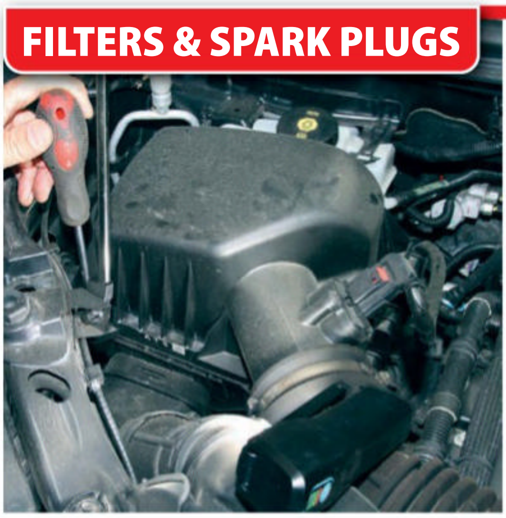
Use a multimeter or battery tester to check the voltage of the vehicle battery, which is on the nearside of the engine bay. Make sure it's securely fitted along with its connections – add a smear of petroleum jelly to the terminals to prevent corrosion.

6 INSPECT FUSEBOX

There's a fusebox in the nearside corner of the engine bay. Carefully release its plastic lid and lift it away to expose some fuses and connector plugs. Look for water ingress and corrosion. There's a diagram on the underside of the lid to help identify each fuse and relay.



FILTERS & SPARK PLUGS

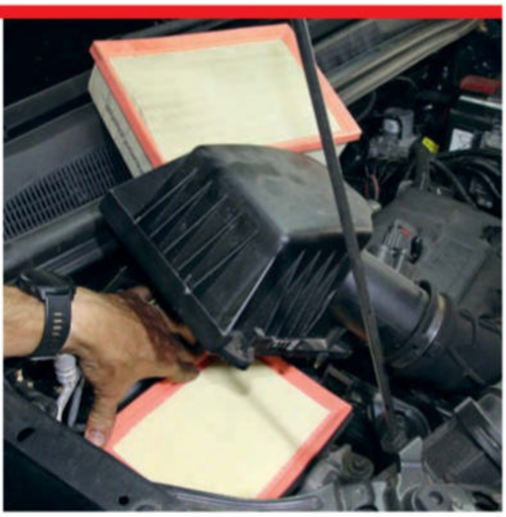


7 UNDO LID

The air filter should be changed every 40k or four years and is located inside a black plastic housing in the offside of the engine bay. Undo a couple of crosshead screws, which cannot be fully removed, to release the lid. Carefully release it moving it to the left to detach it.

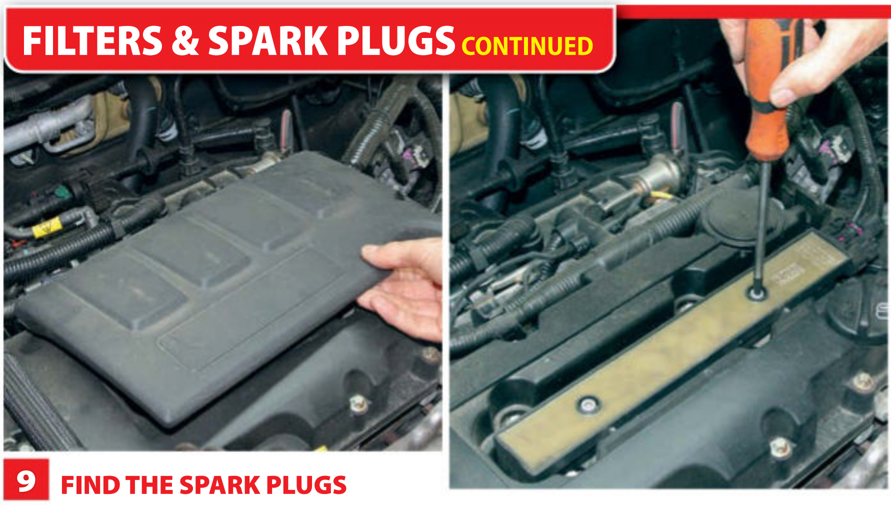
8 REPLACE AIR FILTER

Extract the old air filter, clean inside the housing before fitting the new one and make sure the new air filter is the same shape and size as the old one. Ensure the air filter sits inside the housing and the lid fits flush with the housing to prevent any air leaks.



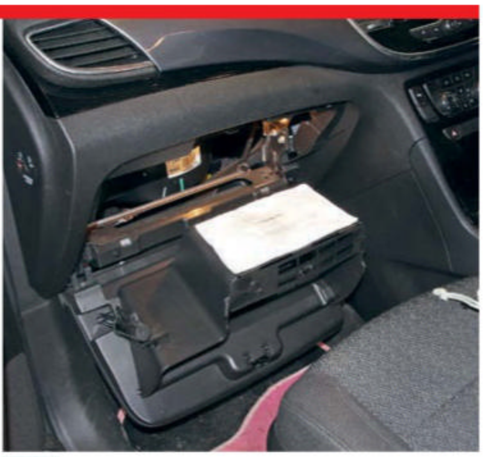
⇨

FILTERS & SPARK PLUGS CONTINUED



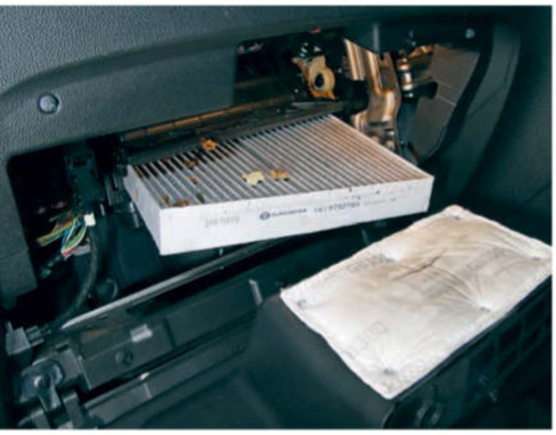
9 FIND THE SPARK PLUGS

The spark plugs should be replaced every 40k or four years. To access them, prise off the plastic cover in the centre of the engine to reveal a coil pack assembly, secured with a couple of Torx T30 screws. Undo these, remove the coil pack assembly and extract the spark plugs. Tighten each new plug to 25Nm.



10 DROP THE GLOVEBOX

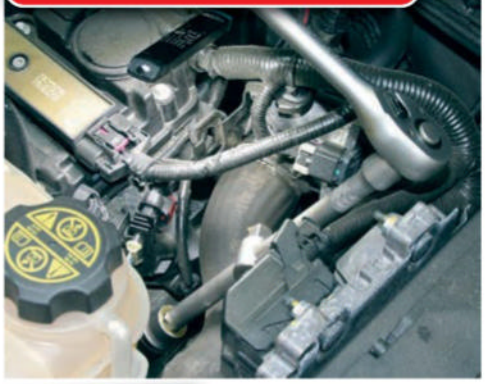
The cabin filter is behind the glovebox. Open its lid, pinch the sides to release the stops, then carefully pull it down a little to access and detach a small plastic strut on the nearside.



11 REPLACE CABIN FILTER

Look for an oblong-shaped access panel above the heater assembly (behind where the glovebox was fitted) and pinch the sides of it to release it and expose the edge of the old cabin filter. Extract the old cabin filter, remove any debris, then fit the new one, ensuring any airflow arrows on it are pointing down.

ENGINE OIL & FILTER

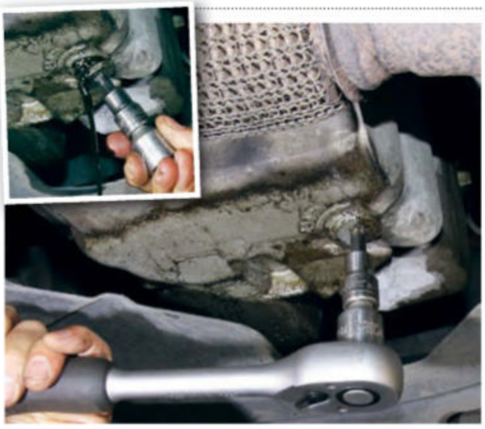


12 UNSCREW OIL FILTER

Remove the oil filler cap and extract the dipstick to help with draining the oil. Next, use a 24mm socket, extension bars and a ratchet to undo the oil filter housing, accessed from the front of the engine bay.

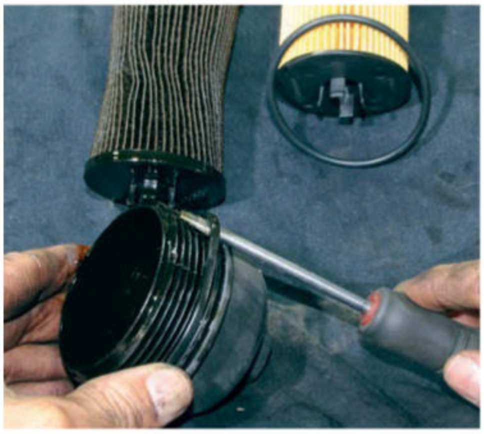
13 REMOVE OIL FILTER HOUSING

It helps to remove the oil filter before draining the oil from the sump, but it can be a messy part of the job, especially when it comes to lifting out the old filter housing. Have a large rag close by to catch any oil that drips out as you lift out the plastic top of the housing and the filter inside it.



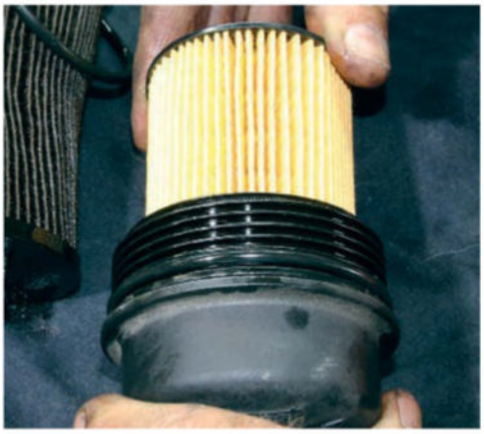
14 UNDO DRAIN PLUG

Position a drain bowl underneath the sump, then use a Torx T40 bit to undo the sump plug. Carefully unscrew it until oil starts to leak out, then remove it and leave the oil to drain for several minutes.



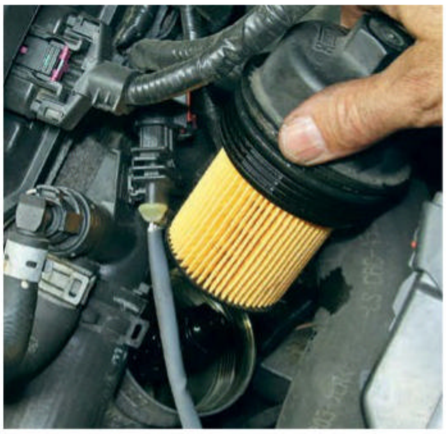
15 CHANGE SEAL

Whilst the oil is draining, use a small screwdriver to prise off the old seal around the thread of the oil filter housing, then fit a new one in the same position and add a smear of fresh engine oil around it. This will help to reduce the risk of the new seal dragging and tearing when refitting and tightening the housing.



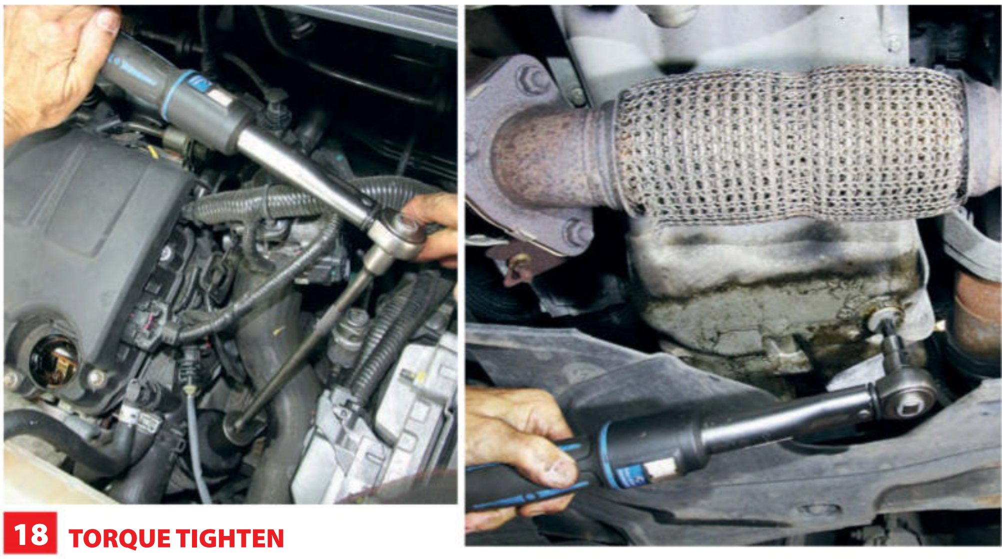
16 FIT NEW OIL FILTER

Pull the old oil filter out of the base of the housing and check the new one is the same shape and size – there are different types. Fit the new oil filter inside the housing top, making sure it clicks into position.



17 REFIT OIL FILTER HOUSING

There's not much room to manoeuvre the new oil filter and the old housing top back on to the engine. You may find the oil filter falls out of the housing top, so click it back into place. Fit the two parts by hand.



18 TORQUE TIGHTEN

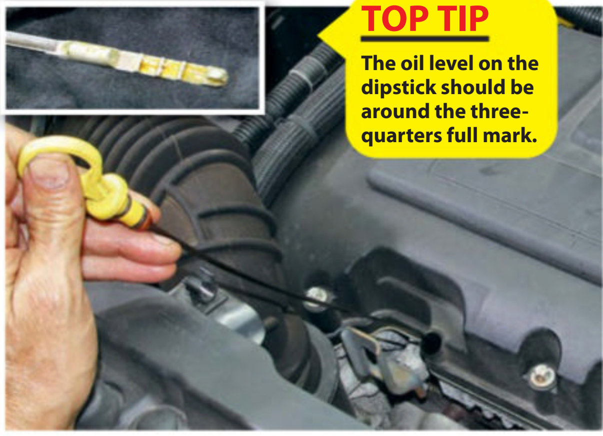
Once the oil filter and its housing top have been refitted, use a torque wrench to tighten it to 25Nm. From underneath, fit a new sump drain plug and tighten it to a mere 14Nm.

19 REFILL ENGINE OIL

Measure four litres of 5W-30 fully-synthetic (Dexos 1 Gen 2 classification) engine oil into a clean jug, then carefully pour this into the engine via the filler cap.

20 RUN & CHECK

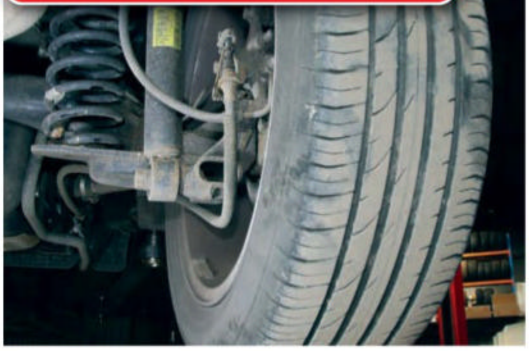
Extract the dipstick, clean and reinsert it to check the oil level, topping up if required. Run the engine and check for leaks, making sure no engine oil warnings are displayed on the dashboard. Switch off and check the oil level again, topping up if necessary.



TOP TIP

The oil level on the dipstick should be around the three-quarters full mark.

TYRE & BRAKE CHECKS

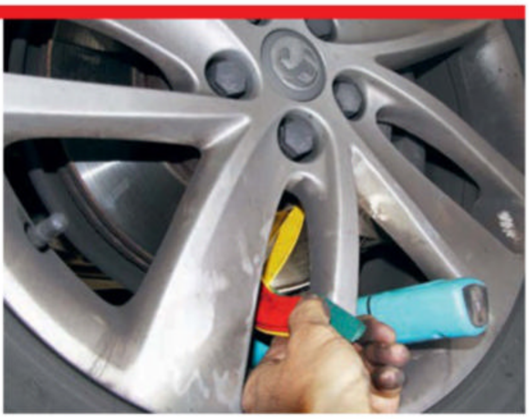


21 CHECK TREADS

Inspect both sidewalls of each tyre to look for bulges, perishing and damage. Make sure the tread depth is above the tread wear indicators.

22 MEASURE PAD DEPTH

There's room to manoeuvre a brake pad thickness gauge through the spokes of the front wheels and behind them to measure the depth of the brake pads' friction material. It should be a minimum of 2mm thick.

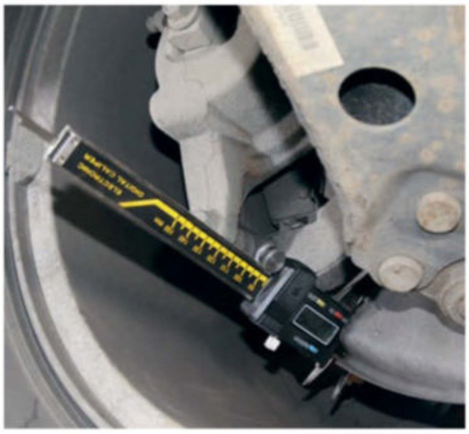


23 INSPECT REAR PADS

There's less space at the rear to measure the depth of the brake pads. Shining a torch on to the caliper, as shown here, can help, but if you are in any doubt, remove the road wheel. The minimum recommended depth is 2mm.

24 DISC THICKNESS

The thickness of the front brake discs is easier to measure from behind the road wheels, where there's a cut-out in the disc guard. The minimum thickness is 23mm. The rear discs are not so easy to measure because of the disc guard (minimum thickness is 10mm), so if there's a noticeable lip on the outer face, remove the road wheels to strip and inspect them.



BRAKE CHECKS CONTINUED

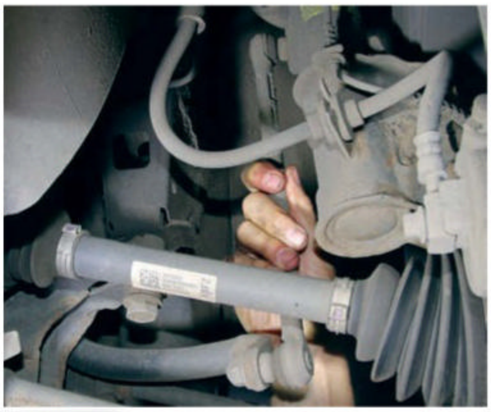
25 CHECK FLEXI-HOSES

Inspect the condition of all brake flexi-hoses, looking for perishing of the rubber and brake fluid leaks. Also, check the condition of all brake pipes, looking for corrosion and leaks.

SUSPENSION & UNDERSIDE CHECKS

26 CHECK EXHAUST

Inspect all rubber hangers and mounting points for the exhaust system to ensure they are intact. If it's safe to run the engine and stand underneath the vehicle, listen for leaks from the exhaust system.

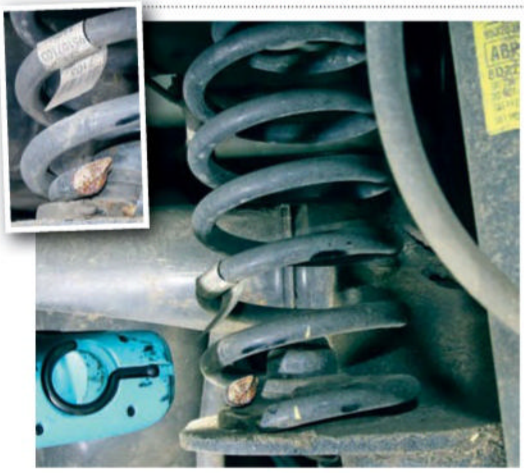


27 WIGGLE ARB DROPLINKS

There's an anti-roll bar (ARB) at the front, so check the condition of its mounting bushes to ensure they haven't perished. Wiggle each droplink to check for excessive movement, which could cause a knocking noise when driving.

28 CHECK FRONT COILS

The front coil springs can be visually inspected over the tops of the tyres. Look for fractures and excessive corrosion, but do not touch the springs in case you trap your fingers. Brush away any dirt caught around the base of each spring.

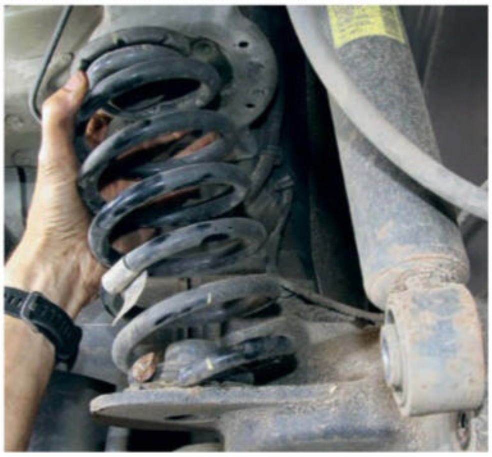


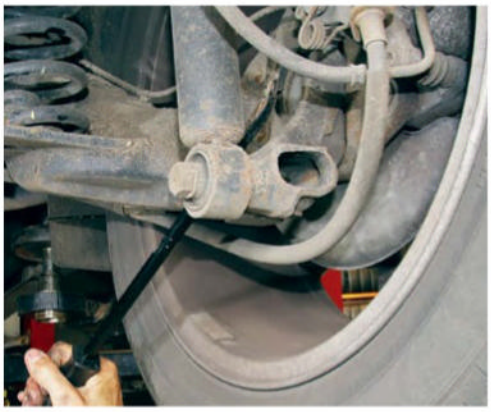
29 INSPECT REAR COILS

The rear coil spring can be visually inspected from underneath the rear of the vehicle. As we discovered on the vehicle shown here, the base/end of the offside rear coil spring had broken.

30 REPLACING COIL SPRINGS

If a rear coil spring needs to be replaced, then it's recommended to replace both sides. With the vehicle raised, support the beam axle with a jack before undoing the lower damper mount. Slowly lower the jack to enable the coil spring to be replaced (change the top and bottom rubber sections if they are damaged), then raise the jack to help refit the lower damper bolt.



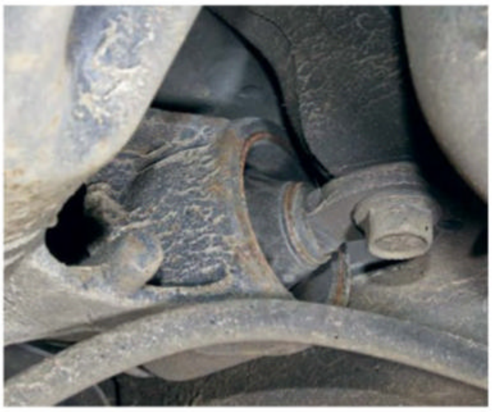


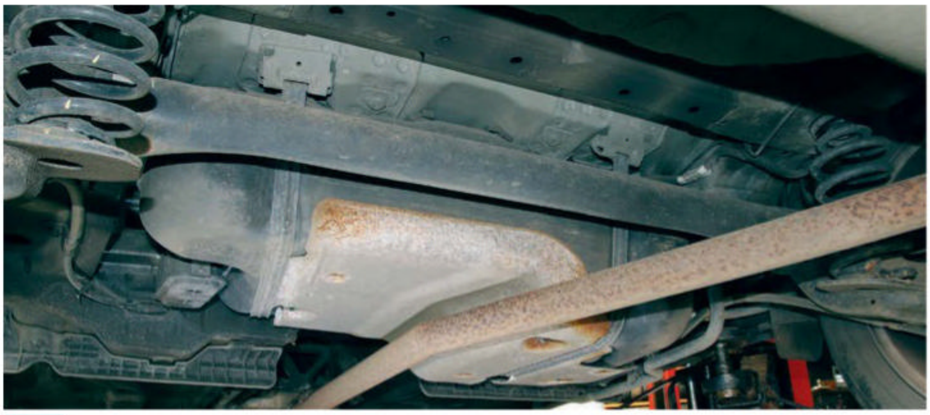
31 CHECK REAR DAMPERS

Visually inspect the rear telescopic dampers for leaks (misting of oil). Inspect their mounting bushes and lever against them with a pry bar to check for excessive movement.

32 INSPECT BEAM MOUNTS

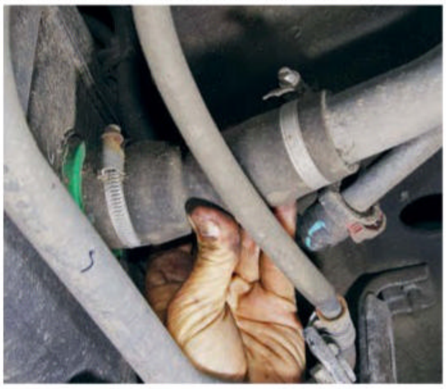
Check the condition of the two frontmost mounting bushes for the rear beam axle, looking for perishing, which could result in handling issues and uneven tyre wear.





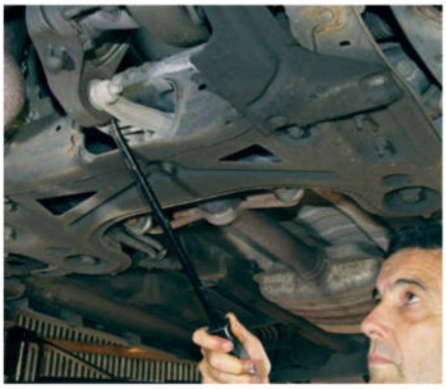
33 CHECK FUEL TANK

The fuel tank is fitted in front of the beam axle. Inspect the condition of its metal cover, ensuring it's securely fitted, and also check the condition of the tank straps, making sure they too are secure.



34 PINCH FILLER HOSE

With the fuel filler cap on the nearside rear of the vehicle's bodywork, filler and breather hoses (two) are fitted into the adjacent side of the fuel tank. Check they are securely fitted, and the rubber hasn't perished.



35 LEVER GEARBOX MOUNT

There's a large dogbone-style mount secured to the underside of the gearbox, near the front of the vehicle. Lever against it with a pry bar to check for wear. Visually inspect the condition of it, looking for perished rubber.

SERVICE SCHEDULE

EVERY 20,000 MILES or 12 MONTHS

- Change engine oil & oil filter
- Check coolant level
- Check tyre condition, pressure & tread
- Top up screenwash fluid
- Check battery
- Check wiper blades & washer jets
- Check all underbonnet components & hoses for fluid leaks
- Inspect brakes
- Check steering & suspension components
- Check auxiliary drive belt
- Inspect exhaust system & mountings
- Check operation of all electrical systems
- Lubricate all locks & hinges
- Check brake fluid level

EVERY 40,000 MILES or 24 MONTHS

- Change cabin filter

EVERY 24 MONTHS

- Change clutch & brake fluid

EVERY 40,000 MILES or 48 MONTHS

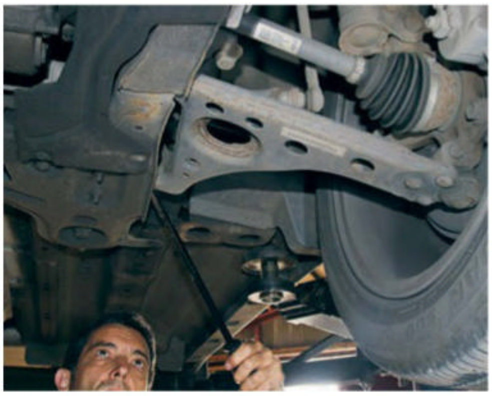
- Replace air filter
- Replace spark plugs

EVERY 100,000 MILES or 72 MONTHS

- Change auxiliary drive belt

Don't forget to also

- **Check the FUEL FILLER CAP'S seal isn't perished**
- **Tighten the WHEEL BOLTS to 140Nm**
- **Check all EXTERIOR LIGHTING including the numberplate lights**

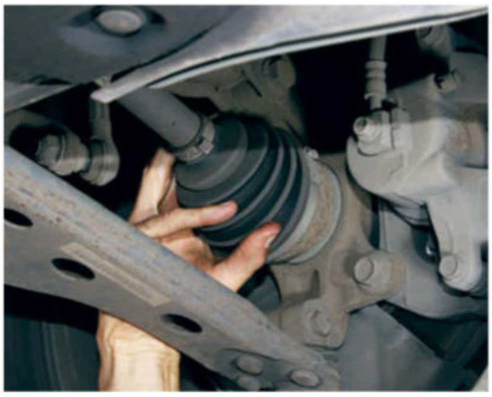


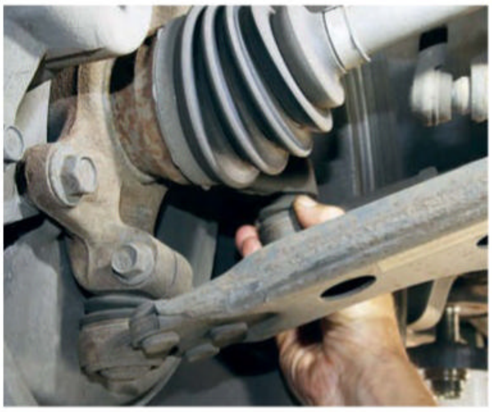
36 CHECK LOWER ARM BUSHES

Lever a pry bar against the inner mounting point for each front lower suspension arm to check for excessive movement (wear). Try to lever against the outer balljoint for this suspension arm to check for movement.

37 SQUEEZE BOOTS

The driveshafts between the gearbox and front hubs have corrugated rubber gaiters over the CV joints. Squeeze these gaiters to look for cracks in the rubber, escaping grease and water ingress, which may result in premature wear.



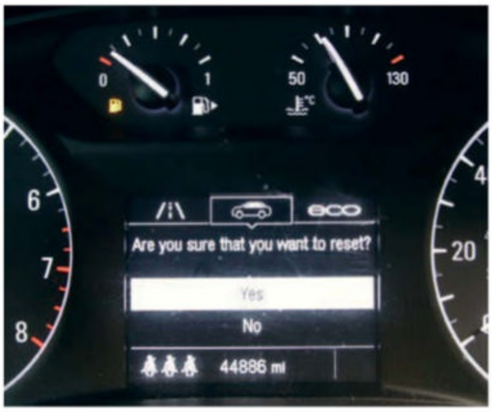


38 PINCH BALLJOINT COVERS

Look for the dust covers around the balljoints for the steering track rod ends (TREs) and the front lower suspension arms. Pinch them to check for splits and escaping grease. If there are cracks in the rubber, water and dirt could get in, leading to premature wear.

39 RESET SERVICE LIGHT

Switch on the ignition and work through the menu options on the left stalk switch to display the life of the engine oil (displayed as a percentage). Choose the option to reset and confirm this using the stalk switch.



Are you sure that you want to reset?
Yes
No

Help!

Your *non-diagnostic* vehicle-related problems solved by **Steve Rothwell**

GENERAL

Waste oil

Q I am a Kent resident. Could you advise me of a suitable contractor who will take or receive 25 litres of waste engine oil. Unfortunately, my local authority waste site in Ashford, will only accept 5 litres for every pre-booked time/frequency restricted visit.

Am I alone with this problem or if there is any useful advantage to your perusing this issue? As I find it incredible that local council waste sites are being so restrictive with this critically important issue.

Lee Parris

A The problem is that local councils do not want to encourage trade waste and disposing of oil is now a chargeable service. It used to be the case that a small garage could store the waste oils, then either sell it to a company that would convert it to a heating oil, or they could keep the waste oil for their own use and garage waste oil heaters were in common use.

Then legislation made it a requirement for the owners of waste oil heaters to require a licence, and the costs involved negated the usefulness of the heater. The cost of disposing of the waste oil then rose and companies would no longer pay for the old oil. This was still not a concern to many small garages and companies such as mine would willingly take the waste oil from customers, knowing it could be disposed of without cost.

The next step was then that the transport costs rose, and garages then needed to pay to empty the tanks of waste oil. This then meant that customers oil was not so happily accepted, knowing it would be charged for when disposed.

Kent council do take 5 litres of oil per visit freely, and this would cover most DIY oil changes on the majority of vehicles. The 25 litres you have would I suspect either be from a commercial vehicle or saved up over a period and is not the average amount needing disposal.

The environment agency does have a hotline to find the closest oil disposal facility available and details can be seen at: https://bit.ly/CMsmOBO or by calling 0800 66 33 66. You can also use the www.recyclenow.com website, to find your closest recycle centre that will take oil, completing a search I did find that some of these sites are unmanned such as supermarket car parks, and so I would expect no limit on the quantity would be imposed.

While there are several larger operators who do dispose of waste oil on a commercial basis, these have a minimum collection quantity of 400 litres, and so this would not be suitable for your needs.

One final possible solution would be to ask your local garage how much they would charge for disposal – this may be the easiest solution.

GENERAL

GENERAL

Jack repair

Q I bought an Arcan 2 Ton aluminium professional floor jack from Costco a few years back and it has given excellent service. Whist using it the other day I noticed the smaller lift piston was sticking and the jack would not lift once any weight was encountered. I tried releasing the piston, but it continued to stick and cannot be used until repaired.

I am finding difficulty in obtaining an overhaul kit of seals, diagrams, parts list, etc., even after emailing the manufacturer in the US (no reply). Any help or tips on overhauling the jack would be appreciated.

David Roberts

The Arcan 2 Ton aluminium professional floor jack.

A Because all my workshop equipment is covered by the insurance company to cover any public liability, it does require that it is professionally serviced and maintained by a LOLER-approved company. This means that I do not undertake any work on the hydraulic jacks myself as this would void the insurance in the event of a problem occurring. This does appear to be a good jack and from the details I have this model is still available.

This US company https://bit.ly/CMOSJsK do list the seal kit and they do indicate that they would ship to the UK. As the kit would not be overly large or heavy I would not expect the carriage costs to be high.

You mention you have emailed the manufacturer, and I presume you done this from their website at https://arcantools.com/contact

It may also be worth trying a company such as www.cromwell.co.uk who are in the UK and do supply a wide range of jack repair kits.

I did also find a technical sheet with a troubleshooting chart on this jack which can be seen at this link https://bit.ly/CM4Wjpd

The other alternative would be to ask a professional company such as this one https://bit.ly/CMfwPJr to undertake the repair, although this may be close to the cost of a new jack.

FORD FIESTA

Crankshaft bolt

Q I would be very grateful for any advice you can give regarding releasing the crankshaft pulley bolt on the engine of my 2013 Ford Fiesta Studio 1.25 Duratec 60PS engine please.

It is now over 10-years-old and has done about 57,000 miles on the original timing belt. So, I assume that now it is a good time to renew the belt?

I am attempting to renew the timing belt and water pump, but progress had been halted by the refusal of said bolt to undo. My son and I have got as far as removing the camshaft cover, alternator, starter motor and engine mounting brackets without too much fuss.

I have tried an 18mm socket and my largest torque wrench (up to 220Nm) on the bolt but with no success. I do not have access to an air gun. I have not yet tried an extension arm on the torque wrench to gain extra leverage. Is there any risk to the crankshaft if we keep trying the above method?

I have tried using a 'Sealey' tool that fits over the starter motor opening and then has a tooth that engages with the flywheel teeth. However, the force we applied was sufficient to snap off the tooth. Luckily no pieces dropped into the engine!

I have assumed that the bolt undoes in an anti-clockwise direction, is this correct?

We wondered if one of the freezing sprays that are on the market might help unlock the bolt? I know that you cannot recommend any one particular brand, but do you know of any that are particularly effective?

I think that if we can't get this bolt undone, we will have to abandon our plans and trust to luck.

Thanks for any assistance you can give.

John Osley

A The timing belt should be replaced at either 100,000 miles or 96 months and so your Fiesta is certainly due for the replacement belt. The crankshaft pulley bolt on your Fiesta is a standard right-hand thread and so does as you have assumed undo in an anti-clockwise direction.

I have certainly encountered some issues undoing these bolts over the years and so do understand the frustration you feel over this issue. Without doubt a large impact gun is a good option in this case, but I would also add that a good socket needs to be used. I have encountered a situation in the past due to a worn socket, causing the edges of the bolt head to wear on the attempted removal resulting in an issue with obtaining sufficient grip. In that case the socket was then welded to the bolt to complete removal.

With the flywheel locked and a large knuckle bar with an extension (think scaffold pole) directly on the socket, you should be able to undo the bolt, but I would not use a torque wrench as this will exert a force above that which the torque wrench is designed to cover. You will also loose force if any extensions are fitted between the bar and the socket and so the shorter the distance between the knuckle bar and the socket the better. Due to the position of the bolt this kind of access would require the vehicle to be up in the air sufficiently to swing the knuckle bar.

I don't think a freezing spray would sufficiently shrink the bolt to assist its removal, but on the other side of the scale, heating the bolt would expand it and this would break the contact in the threads which then should allow the bolt to be undone. Part of the issue is that in production a thread locking compound is used, and so the torque required to remove the bolt also needs to overcome this. I have used this method of using heat. As the bolt is replaced any effect of the heating on the bolt will not be a concern.

FORD FOCUS

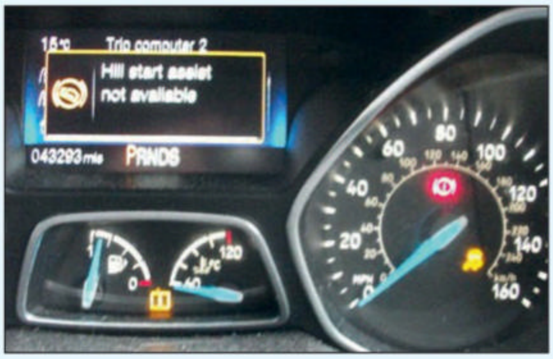
Drag link replaced

Q Last week I installed a new drag link on my 2015 Ford Focus 1600cc petrol. I did the same one two years ago and counted the number of turns when taking it off. I also left the locknut in its position, and it worked perfectly no problem at all when the job was finished it drove perfectly.

This time when I had installed it and went to drive the car the steering was out, and the steering wheel centre bar was facing almost directly downwards instead of crossways. Obviously, the new track rod end was not exactly the same as the previous one so I adjusted it, so the steering wheel was in the correct horizontal position and it now drives good. But I have warnings on the dashboard now (as in the photograph), two yellows ones and the hill-start assist not available. They came up when I had the steering problem. Is there any way I can get rid of them?

On my previous car a Ford Mondeo I used to be able to plug in my MaxiScan under the dashboard, detect and cancel problems like them but cannot see anything on this Focus. Any info from you will be much appreciated Steve.

Pete Munday



A Your Ford Focus does have a diagnostic connection which is located in the small cubby hole to the right of the steering wheel. Providing your MaxiScan can read body codes, then I would expect that this can be used to check and remedy the situation.

I would guess a code such as C0526 to be detected indicating that the problem is with the steering position sensor. You may also get a U or a P code, and it may also be the case that this needs to be attended to.

If the steering geometry is correct, then a possible sensor fault or even a fault that is unrelated to the steering has occurred at the time of the work may be the reason for the problem. Whichever the source of the problem is, once the codes are retrieved this should be easily diagnosed.

FORD CONNECT

Front shock replacement

Q I have a 2006 Ford Connect 1.8 TDDi, which is an ex-Royal mail van. Purchased at 77k, now at 149k with full service history. I am fitting new front shocks. The shocks/springs strut mounts bushings sleeves and bump stops have now been assembled (cheaper to source OEM parts individually) though strut mounts initially sent were wrong. This is common as many suppliers believe Ford Focus Mk1 are same but there's a 5mm difference on strut mount studs which caused some delay returning and finding another correct type even after sending vehicle reg, etc. Droplinks x 2 were replaced five months previously, and wishbones a few years ago.

Discs are all good and I did cambelt/tensioner (Dayco) which took about one hour and so simple to do as it's a dry belt.

CV driveshafts x 2 also done four months ago, rear shocks done (they were simple), and rear bushings on leaf springs.

Anything else we should replace on front? The original shocks I'm told for wear and tear is about 100k. Is that correct?

I currently use it as a parcel delivery van, and it gets a hammering on some agricultural farm lanes and some well-hidden potholes. Overall, it's a great van doing 45mpg and I intend to keep it for another 3 to 5 years.

Tony Tucker

A You do seem to have covered all the area that may develop to be a problem. It is difficult to specify a time that the shock absorbers will last for, and this will of course vary with the use of the vehicle. The given guide time of 100k is only a guide and I have seen these last for much greater mileages and fail at much lower mileages. Regular inspection is of course the best course of action.

With regard to the parts being replaced, the only point I would suggest is that as you are stripping the front suspension and replacing the mentioned parts, it may also be a good measure to replace the lower arms, this would ensure that the complete front suspension will be good for a while.

FORD KUGA

Battery

Q As my 2019 Ford Kuga 1.5 EcoBoost is now out of the warranty period, I think it would be prudent to fit a new battery (the Stop-Start no longer operates). I can certainly undertake the task in hand, except for resetting the Battery Management System. There seems to be a variety of methods depending on the Ford model in question.

I wonder if you could please inform me of the correct procedure regarding my vehicle?

Eifion Wyn Jones

A From the details I have as given by Autodata your Kuga does not have a battery monitor system and so will not require the new battery to be programmed in when replacing it.

The automatic windows will need to be reset as follows:

- **Switch the ignition on, then lift and hold the window switch to fully close the window. Release switch, and then lift and hold the window switch for one second.**
- **Press and hold window switch to fully open the window. Release switch. Lift and hold window switch to fully close the window. Check the window operates correctly.**
- **Repeat procedure for remaining windows, then switch ignition off.**

FORD FIESTA

Starting issues

Q I require a bit of help with an issue with my 2009 Fiesta 1.25. First start-up of the day is normal, turn key in the ignition and it starts without issue. After driving for about 10 minutes, after I park up and turn off the engine and leave it for any length of time, it can take two or in some cases three or four attempts before it will start. The engine seems to turn over, as does the starter motor.

Once started the car runs and drives fine with no issues or warning lights. I initially thought it was an ignition system issue, so I've changed the coil for an OE coil. I've also changed the HT leads and the spark plugs. I ensured the plugs were gapped correctly as per the specs in the Haynes manual at 1.3mm.

The connectors on the starter motor appear to be in good condition. It has been suggested to me that changing the starter motor would fix the issue. However, I want to rule out any other causes before popping down my nearest motor factors and getting one.

Appreciate any advice you can provide.

John King

A There are two possible candidates for the problem and if the starter does appear to be spinning at full speed and there is no indication of a battery issue, I would first change the engine coolant temperature sender. This may be causing a problem by allowing the engine control unit to sense a cooler engine temperature than is actually present, which would cause a richer mixture than is required. Due to the low cost of the sender, it would be worth replacing this first.

If this has no effect, then the next component I would replace is the crankshaft position sensor. If this is the original it may be giving problems, and it is not unknown for this symptom to arise from a failing CPS.

If replacing either of these two components does not rectify the problem, I would consider using diagnostic equipment to read off the live data under the warm start scenario. I would be doubtful that if the engine is spinning over at a normal speed, that the starter would be the source of the problem.

DAIMLER SUPER V8

Brake master cylinder

Q The brake master cylinder on my 1995 Daimler Super V8 is in need of attention to hopefully cure long pedal travel and a soft feel. The brakes do not inspire confidence. The system has been bled in accordance with the workshop manual but without much improvement.

The servo is functioning as it should, firm pedal engine off, and when started the brake pedal goes down but with a spongy feeling. The brake pedal does not go to the floor and holds the pressure.

A new master cylinder is £500 or more from various sources and reproductions – repair services are not available. I have tried to buy a seal kit to overhaul the original but whilst caliper seals are readily available, master cylinder seals are not!

Can you explain why this is and perhaps offer some solution. Master cylinders are available from reputable dismantlers at around £50 but, of course, unknown quality. Your help would be very welcome. Thanks in anticipation.

Ronnie Mapes

A From the checks I have made it does appear as though the seal kit was widely available in the past but is now has a limited availability.

I did however manage to find both the seal kit and a more reasonably priced brake master cylinder from this Jaguar parts supplier – https://bit.ly/CMdQV8p – and hopefully they will be able to supply the parts you require. As I have not used this supplier, this is only a suggestion and not a recommendation.

I would mention that the bore of the cylinders should always be checked before replacing the seals, as if the bore is of poor condition, the repair may not be effective.

JAGUAR X-TYPE

Sourcing a subframe

Q My wife has a 2004 Jaguar X-TYPE 3.0 V6 estate automatic AWD. It is generally very good, and she wants to keep it for as long as possible. It passed the MOT a couple of days ago with a couple of advisories that will be attended to.

The main area of concern is the rear subframe and I already have an agreement with the garage that if I source one, they will fit it and attend to the brake pipes and anything else they find. No longer available as a new part I am trying to find a good used one.

I believe that any replacement will need to be from an AWD car as the subframe from these has bracketry for the rear diff mount that is not present on the 2WD.

My question though, must it come from an estate? Estate parts seem to be rare. I was told by one specialist breaker that the only difference between the two is a superfluous bracket or attachment on the estate version that has no real function and that a saloon subframe would fit just fine.

I am not entirely convinced and thought I should research further before committing. Being so scarce I am unable to look at the two versions to compare for physical differences.

Hoping you can advise.

Victor Stevenson

A From the details I have the rear subframe for the estate and saloon are basically the same, and the part numbers that should fit are C2S7218/C2S20422/C2S20869/C2S28259/C2S30513.

This subframe was used on the Jaguar X-TYPE 3.0 petrol from 2001-2010 (VIN Range C00001 through to C99999, D00001 to D99999, E00001 to E99999, J00001 through to J99999).

And the X-TYPE 2.5 petrol from 2001-2010 (VIN Range C00001 through to C99999, D00001 to D99999, E00001 to E99999, J00001 through to J99999).

So, the removed subframe from any of the above range should be suitable for your wife's Jaguar.

JAGUAR XJ

Parking camera

Q I have a 2016 Jaguar XJ 3.0 with a parking camera issue. There are two fault codes – B108E-31 and B12BD-18. The problem is that the front camera only works manually if you press the screen, and there are no side or rear cameras, none of the cameras work automatically and I am not sure where to start.

I have looked at the wiring in the boot and have given that a wiggle, but no difference. I managed to get my arm up to wiggle the rear camera wiring which is behind the crash bar to see if there are any problems, but no change.

Have you any ideas where to go now? Or do you have a wiring diagram as this might help. It's not easy working out what is what in the boot with so many boxes in there.

I would be very grateful for your advice.

Mark Deane

A The B108E-31 code is indicating that no external circuits are connected to the FDIM (front display interface module). The OBDII code is set in the APIM (accessory protocol interface module) when an error is detected in the touch sensing ability of the FDIM.

The code B12BD-18 is indicating = 'Rear Camera - No Signal' but this can be a false signal.

Most of the problems that are associated with the cameras and these associated codes are due to a failure in the loom or connections, and checking the three modules in the boot area would be a good first move. The three modules – left lane change, right lane change and multifunction control module are located on the left and right side behind the bumper and on the right side near the fusebox and the other modules.

Checking in this area should give an indication of the condition of the wiring and connectors, and any damp would be the source of a problem.

Unfortunate no wiring diagrams are available to me for this vehicle.

JAGUAR X300

Water in fuel

Q My Daimler Six (Jaguar) X300 with a 4.0-litre AJ16 engine has a persistent and, at present, untraceable misfire. This happens at all revs whether hot or cold. I suspect water in the fuel. Have you any experience or thoughts on additives to disperse the water without the obvious draining the tank? Thanks for help.

Ronnie Mapes

HEET
GAS-LINE ANTIFREEZE & WATER REMOVER

A There are additives which are designed to remove water in fuel, such as HEET Fuel-Line Antifreeze & Water Remover available from this retailer for £7.95 https://bit.ly/CMdWwcr or STP® Petrol Winter Treatment with Water Remover. Another option is the BG Ethanol Fuel System Defender, a list of the stockiest for this can be found at https://bgprod.co.uk

As your Jaguar does have a petrol filter I would as a first step replace this and deconstruct the old filter once removed to check for evidence that water is present in the fuel. If this is the case, then I would expect to see quite positive signs within the petrol filter.

If there are no signs of water contamination within the petrol filter, then it may be the case that the misfire is due to another source, and if this is the case then this would be worth investigating.

DAIMLER V8

Gearbox trouble

Q My friend has a 1998 Daimler 4.0 V8. He had to get the gearbox overhauled late last year as he couldn't get the car to go forward, it only went back. Gearbox was overhauled in Arbroath, Scotland recently – the guy there said it needed to get about 13 litres in but to put it in stages.

The instructions were to put in 5 litres at top filler cap, then turn engine on for about 10 seconds. Gearbox place apparently only put 1 litre in after being rebuilt. Repeat with next 5, etc., until 12 litres were in.

Today my friend put in 5 litres turn on engine, no bad sound from engine or gearbox engine turn off. He then went to put next 5 in and it came completely over top gushing out of gearbox filler cap. Why could this be?

Could there be no more space with 6 litres? They will check with place that rebuilt 'box if they only put 1 litre in. Any other possibilities? Is it meant to be 12 to 13 litres that go in? Could there be something stopping remaining 6 going in?

Friend also informed me that when the Damiler was on 2-poster ramp and autobox in 'D', the wheels are not going round 'creep' mode which sounds concerning. Thanks in advance.

Gary Forrest

A The total capacity I have for the vehicle is 10 litres, and this is the dry fill capacity. The drain and refill capacity is given as 8 litres, and so it would appear that the gearbox centre have given him an incorrect capacity.

The instructions for filling the transmission vary according to whether this is a 5-speed or 6-speed transmission – these are as follows:

- **If this is the 5-speed automatic transmission, then the gearbox should be filled with the specified amount.**
- **Diagnostic equipment should then be used to check the automatic transmission fluid temperature.**
- **Then start the engine and select each gear for 2-3 seconds, then return selector lever to 'P'. Ensure that the transmission fluid temperature is 35°C.**
- **Remove the level plug and allow any excess fluid to drain off. If no fluid loss is apparent: Top up until transmission fluid drips from level hole.**
- **Fit new level plug.**

If the gearbox is the 6-speed version, then this is as follows:

- **Remove the level plug and fill the transmission with the specified ATF until it flows from level hole.**
- **Fit level plug.**
- **Add 0.5 litre of oil. Fit filler plug. Diagnostic equipment should then be used to check the automatic transmission fluid temperature.**
- **Start the engine and select each gear for 2-3 seconds, then return selector lever to 'P'.**
- **Ensure the transmission fluid temperature is 60°C.**
- **Remove the level plug and allow excess fluid to drain off. If no fluid loss is apparent, then top up until the transmission fluid drips from level hole.**
- **Fit level plug.**

It would be good to first ensure the amount of fluid that was in the gearbox when it was returned, but from the capacities I have the maximum that it would be possible to put in with 1 litre already in would be 9 litres. I would also question if the torque converter was also checked and repaired or replaced as this may be the source of problem.

VAUXHALL ASTRA

Timing belt change

Q I am a long-time reader of the *Car Mechanics* magazine. For the first time I have found myself at the mercy of a named dealer franchise garage and have questioned the work that has been undertaken to my partners 2015 Vauxhall Astra GTC 2.0 CDTi with 82,000 miles. And would appreciate your opinion on the likelihood of the fault that has occurred on the car.

We attempted to book the car into our local garage that we know and trust, however, they unfortunately said that they wouldn't be able to undertake the timing belt change. So, we booked the car into the local franchised Vauxhall garage.

Since they were going to undertake the timing belt, we made the choice to also book for the car to be serviced and MOT'd at the same time. The job was booked four weeks in advance of the due MOT date. The car was purchased from this dealership, so we had no issues with them undertaking the work as they knew the history of the car.

On the evening of the date the MOT was carried out I received a call from the garage, they advised me that the car had a number of advisory faults and wanted to know how to proceed with it. The faults were as follows: offside front tyre near legal limit – around 3mm tread depth; nearside front tyre near legal limit – around same tread depth; the brake fluid requires full system purge and replacement; A/C system requires maintenance; wiper blades were very smeary; SVS "Service Vehicle Soon" warning light on dashboard – the car went to the garage with zero dashboard warning lights and was running and driving fine.

During the course of this phone call, I challenged them on the wiper blades, as I had replaced them myself two-weeks earlier, with Bosch Aero twin blades. They had no response to this. I informed the receptionist that when we dropped the car off this morning that there were no warning lights on the dashboard, her response was – "The Technician turned the key in the car and the SVS light remained on". I told the garage that if the named issues were advisory only that I would collect the car and consult my partner and make a decision as to where and when we would get any of this replaced. The conclusion to this phone call was that the car was ready to collect.

For context my partner and I both work full time jobs, we live in a village that has been currently under heavy amounts of roadworks and subsequent traffic lights. I work back shift and since I had fielded the call, my partner rang the garage before doing the school run to confirm the car was ready for collection and to make the payment before going in on their online system.

At this point she was informed that the timing belt work hadn't been done and that the car wasn't in fact ready for collection. I found this strange since, as we said all the work had been booked at the same time and had been booked four weeks in advance. We were able to collect the car the following afternoon around 2pm.

Upon arriving at the garage, we queried the SVS light with the staff member at the Service desk. We were told, "that's what the technician said." I pressed again and informed her that the car didn't have any warning lights when it came into the garage, she simply shrugged her shoulders and left to get our keys. I gave a cursory inspection of the car, started the engine. The first thing I noted was that it was now very sluggish to start, where previously it fired almost immediately. Upon the engine turning over, the SVS (Service Vehicle Soon) light remained on. I sprayed the washer jets and confirmed that the wiper blades were in fact not "smeary" and were cleaning the windscreen as you would expect after recently being changed. I turned everything off and we went back to the service desk. We had to ask to be given the MOT Certificate at this point. I checked the advisories, and from the list I was given on the phone only one advisory had been recorded on the MOT, the offside front tyre. I asked to speak to a manager.

The Assistant Service Manager came out after a period of time and asked what the problem was? I explained that you called me yesterday and told me the car was ready for collection, when it wasn't. I asked him if he could explain that? He told me he would have to investigate why we were told that. I told him that the car came in with zero warning lights and now after having timing work done it has issues with the SVS light. He went on to say that this is linked to the Engine Management of the car and alludes to the car having an Engine Management Fault.

I challenged how in the 4/5 hours of dropping the car off and it being parked, not idling in their car park, he believed it has developed an engine fault. He offered the exact same word for word explanation, "Thats what the technician said". I explained that the customer service from his staff was appalling and asked what the process is now, since I am not happy with the level of work that has been done on the car? He again offered nothing. I pressed him why all the "advisory" issues I was told about on the phone don't appear on the MOT certificate bar one? He simply said they won't always list all advisories, something which I have since confirmed with the DVSA. The outcome of this was frustrating and we ultimately and very reluctantly drove the car away from the garage.

Upon the subsequent journey home my partner found that the car's steering felt very heavy, whereas before it was finger light. It felt like the engine wasn't responding with the power that it had previously. Ultimately the characteristics of the driving experienced had transformed since the dealers Technicians had worked on the car.

I called the garage back and asked to speak to the service manager again. I explained that the car isn't driving well at all, its struggling to start and put it to him that since their garage had undertaken work to the timing belt and auxiliary belts which synchronise a lot of systems that something has potentially been missed or not quite aligned right. I asked him again, what the position of the garage is as I'm not satisfied to accept the car returning to me like this. I told him I am more than prepared to be fair and reasonable and give them the opportunity to assess the car and fix any issues. He said if they had made a mistake, they would hold their hands up to it.

I returned the car to them the next morning for a road test. I too felt like the steering wasn't quite the same and again it was very sluggish to start. The mechanic came out for a road test and after a struggled start suggested it had a cold fault issue and proceeded to repeatedly fire the engine over with the key. He ultimately said it felt fine to him but did concede he doesn't drive it regularly however it is an older car. I pushed back and explained it has done well under 100k miles, been serviced regularly and appropriately – and prior to our visit to the garage displayed none of these issues. He responded by explaining that the SVS light is like a level 'B fault' code, that's why the Engine Management light isn't on. A level 'A fault' would trigger the Engine Management Light.

They have since run a diagnostic check on the car and told me that the No.4 glow plug is faulty, and they have cleared this fault. They wanted to keep the car overnight to assess whether the fault would return in the morning. They have called me and told me the fault HASN'T returned but that they will replace the glow plug as a gesture of goodwill as well as wave the diagnostic fee of around £140. Since this work being done, the steering has displayed none of the faults it did prior to the first attempt of the timing belt being changed. We asked for a printout of the diagnostic report, something which they have since reneged on, which further raises my suspicion of their blameless workmanship. What was sent was quite simply an email, saying that they have run a diagnostic assessment on the car and checked for a SVS fault. So, I will now have to pay someone to run a proper diagnostic check on the car to find out what faults if any are stored and if indeed, they have been cleared from the car's ECU.

My question ultimately is, can a misaligned timing belt/auxiliary belt cause glow plug issues or steering issues, or at least running issues?

I am also aware that since the car has done around 80k miles that the glow plug may well have failed. However, it has failed on their watch. I am sceptical about what the garage is telling me as I have a background in Engineering, and I have never known a garage to undertake work free-of-charge when there is no issues with their workmanship.

The garage staunchly defended their position from the offset and I have explained that if your car came in with no faults and left with some would you accept it without question? The Service Manager responded by saying "some people would". I have since been in contact with Vauxhall's Head Office and begun a complaints process over this garage as the work aside, their level of customer care is abysmal.

I look forward to your reply.

Roderick Campbell

A My first concern is that your local garage was unable to replace the timing belt, and I am hoping that this was due to them being busy and not due to their inability, as this is quite a straightforward job with a given book time of 1.5 hours.

As you kindly gave me the registration number, I checked the MOT record and can see that the only advisory is as you have mentioned – offside front tyre worn close to legal limit/worn on edge (5.2.3 (e)). I would also say that the brake fluid requiring a purge would not be a listed MOT advisory unless the fluid was a very poor colour, neither would the A/C system feature on the MOT or is part of the test.

While the SVS is the service indicator, this on the diesel model will also indicate a fault code in the system, but I would need to know the code retrieved to be able to identify the source of the problem.

The auxiliary belt is not in any way timed up and does not need to be synchronised and so if fitted in place correctly this should have no effect on the operation of the engine. If the timing belt were incorrectly fitted, then this would have an adverse effect on the running of the engine, and it would in most cases also cause the engine management light to illuminate.

This is a very difficult situation to comment on because it can be the case that problems with a vehicle can appear at any point, and if the vehicle happens to be in the workshop when that fault occurs, it does not always indicate that the garage is at fault.

I would agree that the replacement of the glow plug as a goodwill measure, does appear to be slightly mysterious, and if the timing belt had been fitted a tooth out, then this may have given the symptoms you experienced, and these would then have been rectified by the correction of the problem.

I do think you have taken the correct action by raising your concerns with Vauxhall directly and hopefully they may be able look into the situation sufficiently to give you an explanation of the events.

One scenario may have been that a poorly fitted timing belt was allowing the engine to run out of its parameters. This will trigger the camshaft sensor to place a code in the engine management system, triggering the SVS light and giving the poor running problems you experienced. The garage deciding not to admit to this covered the fault by saying that a glow plug needed changing, using this time to refit the timing belt. This is only a scenario that may have occurred, but it would be worth looking to see if any of the glow plugs have been replaced. This should be quite obvious, and a new glow plug would stand out with a shiny base.

If you feel that Vauxhall do not satisfactorily look into this issue for you, the next step would be to contact themotorombudsman.org who should be able to assist, at the very least you can fill out a survey on this site to rate the dealer.

VAUXHALL GRANDLAND X

Emissions fault

Q My wife drives a diesel Grandland X which has just developed an emissions fault. I cannot read the codes, and the car is booked into a Vauxhall main dealership for repairs hopefully!

Just wonder if you know anything about these and are they trouble! If so, I've advised her to get rid, but she likes the car.

It came up with 'emissions fault' unable to start in 700 miles. It has the AdBlue system.

Ian Browning

A I am presuming this has the 1.5 diesel engine and this is a PSA group engine. They are generally a good engine and from the details I have this does not have the dreaded BIO (belt-in-oil) timing belt and as such would require the oil changed regularly to ensure trouble-free running.

AdBlue systems can tend to be problematic, and the reliability of a diesel does depend on its use. Several short runs are not the optimum conditions for a diesel engine, and these do need to have a good 20-30 mile run at least once a month to ensure that the DPF system operates efficiently.

It would depend on the reason for the emissions fault, and this may be a failed sensor which will be easily rectified. I have not heard of any reports of common emissions problems with this engine and so would be interested to hear what the problem was, and the remedy needed.

VAUXHALL SENATOR

No ABS light

Q Quite a while ago you gave good advice about a dead digital dashboard on my 1993 Senator 3.0 24v. This was dead all bar the warning lights along the bottom. I replaced it with a good used one and all was good until recently when the warning lights along the bottom are all dead except the tell-tale for the indicator.

The MOT is end of next month and I will need the ABS light to come on and then extinguish and now it doesn't along with all the others including handbrake, sports mode, low charging, oil pressure, etc. I have substituted other clusters and still the same so guess it is external.

I am struggling with the wiring diagram and going round in circles, Any ideas where to start? I believe the centre two Multi-connectors are related to the warning lights and can't get any readings off them.

Chris Jenner

A As replacing the dash did rectify the problem, but this same fault does appear to have returned, it may be the case that it was not the dash but the disturbance of the connecting plugs that did remedy the situation.

With this in mind, it may now be the case that the wiring is broken at some point, possibly close to or even within the connecting plug. The feed wires to the ABS light are Brown/Yellow with the earth being a Black wire. Locating the Brown/Black wire to fit a test bulb into the circuit to establish if this is operating correctly would then enable you discover if the break in the feed is prior to or after this point.

The feed for the ABS indicator lamp originates from terminal 29 of the ABS module but at this point it is colour coded Blue/White, it then connects to the Brown/Yellow wire which is connected to a diode in the ABS unit. Hopefully tracing this circuit may get you to the point of an operating ABS indicator bulb.

There are also two system relays in the ABS circuit, but as the problem does extend to the other dash lights, I do not expect the fault to be in this area.

⇨

BMW 5-SERIES

Key fob

Q The car in question is a 2015 BMW 520d Touring F11, which has covered 39,000 miles. Three days ago, I noticed the dash said REMOTE CONTROL-REPLACE BATTERY. The car started and ran fine but I replaced the CR2450 battery with an unopened battery which I measured at 3.26 volts. The old one I removed measured 3.02 volts. I still got the same REPLACE BATTERY symbol but started the engine fine. I used the car last night and realised at my destination that the remote would not lock the car or retract the mirrors.

Today I have used contact cleaner on the fob contacts and battery – the battery still reads 3.26 volt, but still does not lock the car, etc. I tried another CR2450 battery (3.27 volts) but still no success.

My second and spare fob still works perfectly but obviously I still need to fix the first one. Is it possible the faulty fob has lost its programming, and do you know of any synchronisation method?

In the meantime, I have ordered a pair of Duracell CR2450 batteries and will try one when they arrive. The batteries I have just fitted have probably been in my drawer for maybe two years but were sealed and measured the voltages as stated above.

I am loathe to have to buy a new key-fob as three years ago I purchased one from BMW and it cost me £262.

I would be very grateful for any suggestions. I have connected my T86 scanner and the only fault code that has come up is 9308BO - CAS Identification transmitter: undervoltage transmitter.

Melvyn Allen

A The synchronisation method for a BMW key fob is detailed as follows:

- **Hold the remote control against key symbol on right side of steering column. Then within 10 seconds: Press and hold the brake pedal down. Press the start/stop button. The synchronization procedure should now be complete.**
- **If this makes no improvement and as the other fob does operate correctly, then I suspect the fault may be in the fob. You have already replaced the battery and cleaned the contacts, and other than repeating the cleaning process again, to be sure, there is little else that can be done.**

Hopefully the synchronisation method will restore the operation of the fob.

BMW 3-SERIES

Washer fault

Q The rear screen washer on my son's 2016 BMW 320d X-Drive Touring is operating correctly but the front windscreen washer is delivering very low pressure, so we think that dual pumps are fitted. We know that both front jets are clear, and bubbles appear when we blow back towards the reservoir so the reservoir suction strainer to the pump inlet must also be clear so the pump must be suspect given that it operates most frequently.

The problem is that I can't identify the correct part or confirm that the motor and pump are separate or an integral unit and not surprisingly the various BMW dealers I've asked refuse to provide or confirm the correct part number which I need to avoid ordering the wrong item. I'm not sure where or how else I can get that information so I would greatly appreciate any advice or guidance to ensure that I order the correct part or parts of OEM quality.

Roderick Campbell

A The system does use one pump for the front and one for the rear, the rear pump should be set slightly higher in the washer bottle and so this ensures that the front pump has the access to washer fluid when the level is low.

The pump number may be one of a few but is very likely to be 7302588.

The washer reservoir is quite fiddly to remove being located up in the rear of the front offside wheelarch, and the book time on this is just under one hour.

It would be worth ensuring that the pick-up of the pump is clean, and that verdigris or other matter is not blocking the inlet. This could also cause the low pressure that you have.

On BMWs I have worked on in the past the pumps are both the same part number and so can be swapped around, although this may not always be the case, but if the pumps can be swapped, this will determine if the problem is the pump or a possible blockage in the pipes from the pump to the jet.

This may be a one-way problem as you can blow back though the system, and it may be the case that the particles causing the blockage move with the direction of the flow, acting like a one-way valve.

If the problem is in the pipes, then the solution is to dissolve a denture cleaning tablet in the washer bottle, and then allow the mixture to be pumped through the pipes, after around an hour, the system can then be flushed, and this will hopefully clear any obstructions in the system.

BMW M3

Sump pan gasket

Q My 1998 BMW M3 (3.2) just hit 200,000 miles, but please don't tell me to scrap it! I believe my sump gasket is leaking and the research I have done suggests this can be a complex procedure or should I say time consuming. Have you any experience of this and any advice?

Eddie Gracia

STAG
WELLSEAL
JOINTING COMPOUND

Wellseal is the perfect jointing compound when replacing the sump gasket.

A I would certainly not advise scrapping a M3. The book time on replacing the sump gasket is 3.53 hours, and so even though this is quite a job for what would be a simple sump gasket, this is certainly not enough to consign the Beemer to the scrap pile.

In fact, I would take the opportunity and embrace the fact that after 200,000 miles, removing the sump will enable you to thoroughly clean out any residue in the sump or on the oil strainer, then refilling the engine with new oil giving it a fresh start.

The instructions in the BMW manual are very simple – remove engine, remove sump. But the job is possible by supporting the engine, disconnecting the engine mounts and dropping the front axle/subframe. This will of course require suitable equipment and the engine does need to be well supported. Points to watch when doing this are to ensure that the engine hoses and connections are not stretched or strained by raising the engine.

Also, when dropping the front axle/subframe, ensure the ABS wiring is not strained. When refitting the sump, I would use a sealing compound such as Wellseal.

There are two different size bolts used in the sump and the torques setting needed are: M6 x 8.8 = 10Nm, M6 x 10.9 = 12Nm. The sump drain bolt setting will vary according to the size and the setting for this are M12 = 25Nm, M18 = 30Nm, M22 = 60Nm.

BMW 2-SERIES

Engine light

Q When I first purchased my 2015 BMW 218i auto I was driving along when the engine lights came up. I booked it in with the dealer but before the appointment the light went out again.

I did still take my BMW back at the appointed time, and they looked and replaced the Lambda sensor which the mechanic said was the cause.

Since then, the problem has reoccurred several times – after a few days the light just goes off. It has been like this with the light coming on occasionally for the past year.

It has been good and has passed the MOT as well after these incidents. Then recently when I hit the kerb a little bit, and the engine light came on. It stayed on and so I went back to the dealer who replaced the Lambda sensor again.

All was well until recently when I bumped up the kerb, and now the light is back on. Do you think it is the Lambda sensor again?

Patrick Carley

A **The first step would be to get the codes read to confirm that this is the Lambda (O2) sensor, but I suspect that the problem will be related to the wiring and connections to the Lambda sensor.**

This may be due to either a poor connection to the sensor or a fault in the wiring. I believe that the mechanic who looked at your BMW has read the codes and seen that the fault relates to the Lambda sensor and simply replaced the sensor, the movement of the wiring connecting the new sensor will have rectified the fault for a short time, and so the code has cleared and the light extinguished.

Now when the car has gone over a slight bump or had a tap against the kerb, this has disturbed the connection which has again caused the light to come on. This will of course need to be confirmed using diagnostic equipment, but if the code is indicating an O2 or Lambda sensor fault, then I would ensure the circuit is checked before replacing another sensor.

BMW 5-SERIES

Battery fitting

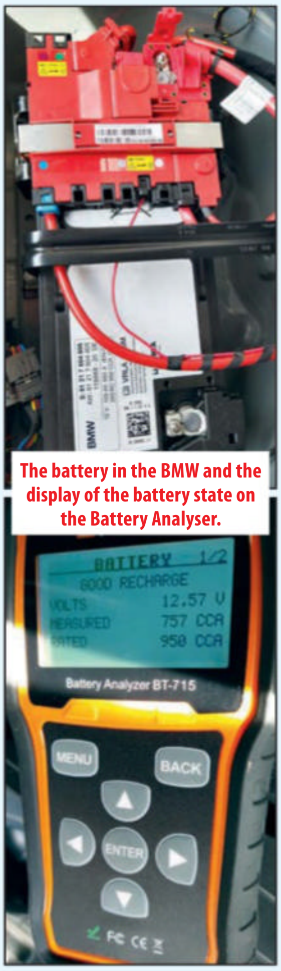
Q I have a 2015 BMW 520d F11 Touring. I have no battery problems whatsoever but with the vehicle on the original battery approaching eight-years-old I can guess it won't be too long before I will be changing the AGM battery with a new one. As you can see from the attachments, my Foxwell battery tester still tells me the battery is good.

I have never changed a battery before with so many cables and connections to it. Is it just a case of removing all brackets and loosening the clamps on the two battery posts and then all the connections etc., lift as one piece?

I have a dedicated BMW scanner that Gendan sold me about four years ago. At the time Foxwell didn't have a scanner that could read my particular car and so I was sold a product called a T86. It has an option called Battery Reset. Will this register the new battery to the car? Will I lose any vehicle settings?

Any help or suggestions you may have to make the job go smoothly with be welcomed.

Melvyn Allen



The battery in the BMW and the display of the battery state on the Battery Analyser.

A **Even though the battery is showing as good, at eight years old you are wise to consider the replacement before problems arise. You will note on the picture of the screen you sent me that the CCA (cold cranking Amps) is showing as 757 against the rated value of 950, so this is showing a loss in capacity. A low or calcified battery can give electronic control problems that will generally cause issues.**

When the battery is replaced the electrical power management system will require programming, and this can be done on the T86 via the battery reset option.

The replacement process is as follows:

- **Ensure the vehicles ignition is off and the key fob is removed from the vehicle, then disconnect the battery from the negative (black) terminal, and pull the earth lead to one side, then the main positive terminal can be removed. This will come off as one unit and the individual connections do not need to be removed.**
- **Ensure that the boot cannot close during this process as with the battery removed it is very difficult to then open the boot.**
- **Remove the battery and then fit the new unit, connecting the positive terminal first followed by the negative terminal.**
- **The T86 should then be used to reset the power management systems informing the vehicle that a new battery is fitted, this will probably ask for the CCA, and the capacity so ensure you have these details from the new battery.**

Once this is done the steering angle sensor may need resetting as follows:

- **Start engine.**
- **Turn the steering to full LH lock. Turn the steering to full RH lock. Switch ignition off. The steering position sensor can also be programmed using diagnostic equipment.**
- **If your vehicle is fitted with active steering this may also need to be programmed using the diagnostic equipment.**

The automatic windows will also need to be reset and this is done as follows:

- **Ensure doors are fully closed and switch ignition on. Press the window switch to the first position and hold to fully open window. Once open immediately press and hold the window switch in automatic open position for approximately 25 seconds. Check the automatic open and close function is now inoperative.**
- **Then lift and hold the window switch in the automatic close position to fully close the window. Continue to hold switch for three seconds. Check that the automatic open and close function is now operating correctly.**
- **Repeat procedure for remaining windows, switch off ignition.**

On the first drive after replacing the battery the engine control module (ECM) and/or transmission control module (TCM) will relearn the parameters and be reset.

MERCEDES-BENZ C-CLASS

No electric drive

Q I've moved into the 21st century and acquired a 2015 Mercedes C300h hybrid (not Plug-in) car with 80k miles on the clock – the first electric assist car I've owned. The car is fine in most aspects – starts and runs fine – that is in diesel engine mode, but it won't run in electric mode.

Nothing shows up in the instrument displays. The hybrid battery is charging OK and showing about 75% plus after a few minutes running, the READY light is ON and no error messages are displayed, but the diesel engine always starts instead of silent electric power.

As I understand it, the Stop-Start function linked to electric drive relies on the 12V battery (as opposed to the high-voltage battery) being in good order and on checking the voltage at the battery terminals (battery still connected), I am getting a reading of 12.1 volts, indicating a weak battery. Oddly, although 12.1 volt is present at the terminals, if I go under the bonnet to the jump-start terminal, a reading of 14.4 volt is noted. My instruction book states that battery charging of the 12V battery should be through this terminal.

My query concerns the replacement of the 12V battery which is housed in an aluminium cover in the boot. It appears straightforward to gain access to this battery and replace it, but am not sure about the terminal disconnection/reconnection procedure, and whether the battery would need recoding to the car.

Any help you can provide would be most welcome.

Richard Carr

A The main advantage of the battery-powered engine on the C300 hybrid is to assist the diesel engine when accelerating and when under load, and the way the vehicle is configured to experience the electric-only drive when moving off. This does need to be done slowly, as any demand on the vehicle will ensure that the diesel engine kicks in. The electric-only drive will also only occur when the diesel engine is up to running temperature and the 12-volt battery is at full capacity. This can also be affected by the heater and needs of the air-conditioning at the time.

The battery voltage readings are rather an anomaly, but I would certainly replace the battery at this stage and would expect it to improve the situation, as this does need to be in a good condition to allow the vehicle systems to operate as intended.

The battery does not need coding, but it is important to fit the terminals in the correct order – this is the positive

MERCEDES-BENZ B-CLASS

Sat-nav malfunction

Q I wonder if you could help, please? We have a 2017 Mercedes B200 CDi (diesel), first registered on 3rd May 2017, which we use as a holiday runabout when we visit our flat in Spain. It is a Spanish supplied vehicle, LHD. Over the last few months, the car's built in sat-nav display has begun to malfunction. I attach a couple of photos showing the problem. One of these issues is unimportant, but the other renders the sat-nav virtually unusable.

The first issue relates to the map display, which should show the car's current position. As you can see, that is not happening. Instead of an arrow symbol showing the car's position in the centre of the screen, there is a small symbol, which when magnified, says 'image not found'. The small compass symbol which used to appear at the bottom of the screen, has also now been replaced with the 'image not found' symbol.

Despite this, the map imagery continues to scroll normally when the car is in motion. That is the less important problem. The major one is that when you enter the screen to input a destination (which normally carries various warnings and spaces to enter details) the whole screen is taken over by the "image not found" messages, which being virtually white in colour, almost completely obscures the text and renders the sat-nav unusable.

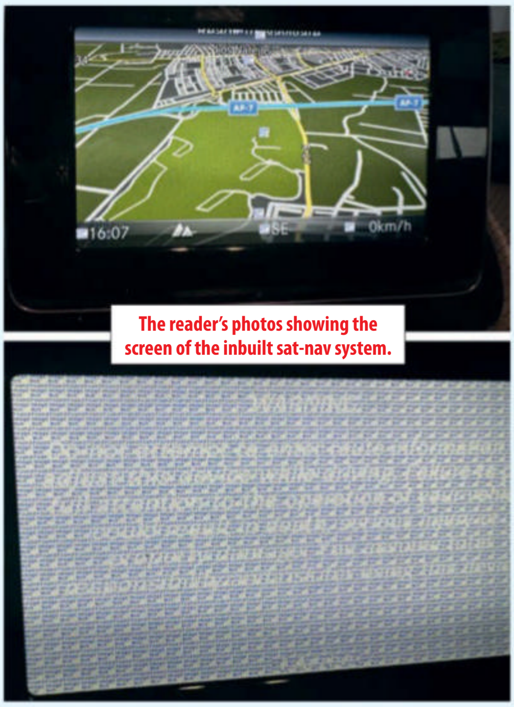
All the functions of the car's screen – radio, car settings, phone, etc, work perfectly so far but my concern is I that whatever is wrong with the sat-nav could be the start of some issue like a failing hard drive or something which will lead to more serious issues. Can you shed any light on what the problem might be please? Thanks.

Stewart Johnston

A In the majority of cases, location problems with these sat-nav systems are due to a fault in the GPS aerial or the communication with the aerial. The first step would be to ensure that the connections on the rear of the unit are good.

It may also be worth trying to reset the unit by disconnecting the battery and then connecting the two battery terminals together using a test light – this will drain the capacitive charge in the unit. As your Mercedes may have an auxiliary battery located in front passenger footwell, the direct connection of the two terminals is not recommended in case the on-board power supply system is still active or faulty. Once the battery is reconnected, the unit should restart, and this may remedy the issue.

If the problem is not rectified by the previous steps, then this could be the start of a hardware problem as suspected, and in this case, I would suggest that checking with the Mercedes diagnostic software would be the next step.



The reader's photos showing the screen of the inbuilt sat-nav system.

terminal first and then the negative terminal, the terminals should also be correctly tightened to 6Nm.

MERCEDES-BENZ E-CLASS

Battery replacement

Q My query regards the battery replacement on my 2014 Mercedes E-Class Cabriolet. I've read conflicting reports on the internet as to the requirement to code in a new battery to the vehicle. Do either the main or auxiliary battery require this? I'm thinking that surely the car's charging system is able to recognise the battery state of charge and condition to then charge the battery accordingly. However, if I'm wrong can I do it myself?

I have a Foxwell NT Pro Scanner (sorry I can't remember the exact model number without checking, might be the 680?).

Dave Steele

A On your model of Mercedes, the battery does not need coding to the vehicle, and so the battery can easily be replaced by yourself without any special measures being taken.

The reason for coding the battery to the vehicle on models that do require this, is to allow the charging system to work to its optimum efficiency, and although the alternator will charge the battery, and will recognise the state of charge. What the coding will do is to allow the system to adjust for any possible battery calcification that may occur on an older battery.

It is also the case that on some models, the system needs to know the specific amperage and capacity of the battery to deliver the optimum charge – this will ensure that the new battery does last and deliver the best service possible.

MERCEDES-BENZ E-CLASS

Brake pad change

Q A friend of mine has asked if I can do a pad change front and rear on his 2019 Mercedes E220. With regards to the front, can the pistons be retracted in pairs or do all four need to be retracted simultaneously. Also does the car need to be put into any sort of service mode to prevent it from doing a self-test and suddenly ramping up to full brake pressure and possibly relieving me of my digits. If so, will a scan tool be required for this, or to retract the electric parking brake motor at rear.

He also mentioned about a gearbox oil change but again I'm not sure if diagnostics will be required to check the level or if it needs to be checked at a certain temperature via diagnostics. I guess I could use a laser thermometer for the later. How crucial is it to have the car on level ground for this? I can get the car level by eye using the jack which is how I do my oil changes but this being a modern Mercedes with a modern dual clutch gearbox, I don't know how finicky it's likely to be on having a precise oil level. Also, would a transfer pump be needed to refill the box.

Anthony Pattinson

A With regard to the brakes, the front pistons can be pushed back individually although you will find that when pushing them back individually, the second piston in the pair will attempt to move out, and so pushing them back in pairs is desirable.

The rear brakes do need to be put into service mode before replacing the brake pads and this can be done without the need for diagnostic equipment as follows:

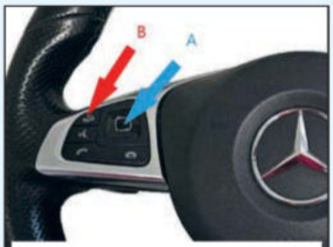
- **Do not depress the brake pedal at any point. Draw off sufficient brake fluid from brake fluid reservoir to enable rear brake caliper pistons to be reset.**

Then activate service mode using multifunction steering wheel controls as follows:

- **Ensure all doors, boot and bonnet are closed. Ensure ignition is in accessory position. Ensure EPB is released. Ensure there are no warning messages displayed.**
- **Using touch control button select "Trip" menu A. Press touch control button to confirm A. Use touch control button to display total odometer reading A.**
- **Then press and hold button B. Within 1 second: Press and hold touch control button A.**
- **Keep buttons A & B depressed until "Vehicle data", "Dynamometer test", "Brake pad replacement" and "ASSYST PLUS" appear in the display.**
- **Release buttons A & B. Using touch control button select "Brake pad replacement" menu A. Press touch control button A to confirm. Using touch control button A select and activate brake pad service.**
- **Switch ignition off and remove remote control from vehicle.**

Diagnostic equipment is required to check the transmission oil temperature, and also special tool part number 725 589 02 90 00 is required to check the level and drain the oil.

The instructions for this process are as follows:



The steering wheel showing the button to use to set the brake service mode.

Draining transmission

1) Remove filler plug. ATF may flow from filler hole.
2) Turn level tube clockwise as far as stop (use 10mm Allen key) and then knock level tube upwards into sump to drain ATF.
3) Remove sump and renew level tube. Check ultrasound tube for damage and replace as required.
4) Renew transmission oil filter (transmission oil filter integrated in sump) if required.
5) Ensure new sump type is installed.
6) Fit sump with new gasket. Use new bolts, tighten to 4Nm + 90°.

Filling transmission

1) Remove oil cooler thermostat screw.
2) Fit special tool 724 589 00 21 00 (adapter).
3) Fit special tool 725 589 03 90 00 (adapter) to sump. Screw in ATF filling tool and fill transmission.
4) Remove special tool 725 589 03 90 00 (adapter) and fit filler plug.
5) Selector lever in 'P'. Run engine at idle for 2 minutes.
6) Switch ignition OFF.
7) Remove special tool 724 589 00 21 00 (adapter). Fit new oil cooler thermostat screw and tighten to 10Nm.

Checking ATF level

1) Start engine. Selector lever in 'P'. Apply parking brake.
2) Connect diagnostic equipment to check ATF temperature and level. Select "Oil level measurement with ultrasound".
3) Attach ultrasound oil level sensor.
4) Check ATF level using diagnostic equipment by following the instructions on screen.
5) Run engine until ATF temperature is 90°C.
6) If ATF level is too low: Remove filler plug and fill.
7) If ATF level is too high: Remove filler plug and drain off required amount.
8) Remove ultrasound oil level sensor.
9) Switch ignition OFF.

MINI COOPER

Brake lights

Q My stepdaughter's father has bought her a 57-plate MINI diesel and to say it's crap is an understatement. When I advised her dad to walk away without even seeing the car, he told me it wasn't in the garages (backstreet independent) interest to sell me a bad car.

He paid £3500 for it with very small part history. He asked me if I would look at it to see if it was OK which I was reluctant to do – so he had a mechanic friend look at it and immediately I knew we were in bother.

There was a long list of issues found by his friend and he also advised that the car in no way could have legitimately passed an MOT. This was obviously cause for concern as a safety issue. So, the friend quoted £2000 to put the car right. As I'm sure you can understand that's more than half the price of the car.

I asked a friend of mine to look at the MINI and they advised the shocks were on the wrong sides, the brakes needed to be stripped, cleaned and rebuilt, one rear caliper needed renewing – and also the brake servo needed replacement. However I got a servo and master cylinder from a scrapyard. And he did this as a favour to me for £700.

Now the car is at least safer, however I have other issues. The brake lights are now on constantly. After a quick check, the driver's side carpet feels damp however the passenger side is dry. So, I don't feel it could be a BCM issue. I pulled the plug for the brake light switch and that makes no difference. My friend also noted that there was oil around the crankshaft sensor which brings me to the next issue. Intermittent cutting out of the engine. It happened when my stepdaughter was driving on a bypass at night so I have now told her she can't use the car until I can get to the bottom of the issue.

Because I don't know the history of the MINI, I wonder if this could be a fuel filter? Or possibly the filter and the crankshaft sensor? The odd thing is it's storing no codes. That's what makes me thing fuel filter. My stepdaughter has complained of intermittent juddering of the car as well that comes and goes.

Any help or advice you could provide would greatly help me out.

Alasdair Campbell

A I would first say that whatever warranty the garage did or did not give, with such a list of faults I would have retuned the vehicle under the Consumer Rights Act 2015. This states that any item you buy from a trader or anywhere selling goods as a business either online or offline must be: Of satisfactory quality - Fit for purpose, and as described.

You have 30 days in which the vehicle can be returned. If you find a defect after 30 days, but within six months, you can request a car repair or replacement, and the dealer should be given only one opportunity to remedy the faults. This vehicle clearly was not fit for purpose.

On the problem of the brake light on constantly, as this is still on even with the brake light switch disconnected, this is clearly showing that a short circuit is present. The brake light operation is via the multifunction control module, and this would appear to be the most likely source of the problem. The circuit from the brake light switch is also connected to the ABS module, and as a first test I would try disconnecting the ABS multiplug to ensure that a back feed from this is not causing the brake lights to illuminate.

If the lights stay on with this disconnected, then the issue must be within the multifunction control module.

The intermittent cutting out could be one of several things, and if no codes are present. I would consider starting by replacing the crankshaft sensor and checking the connecting plug.

This would at least eliminate this as the source, but for the engine to cut out, I would have expected the EML to have illuminated. Given the condition of the rest of the vehicle I would ensure that this does work and illuminates when the ignition is first switched on. Less reputable dealers have been known to remove the bulb.

As the history is unknown, carry out a service including the oils and filters. This will at least give you a good base starting point and may rectify some issues.

Have a problem vehicle? GET IN TOUCH...

If you have a problem vehicle, *Car Mechanics* has the answer in the shape of our technical editor STEVE ROTHWELL. Contact Steve, as detailed below, for FREE advice on all car-related problems. Please help Steve to help you by giving as much information on the symptoms as you can – including the VEHICLE REGISTRATION NUMBER.

As *Help!* is a free service, some complex questions may require more time and resources than we can reasonably allow – when this is the case we will let you know.

Steve will reply to all queries as quickly as possible, but please allow up to 28 days for a reply. Difficult/complex questions or those requiring research may take a little longer – please be patient.

Neither Kelsey Publishing nor Steve Rothwell can accept any liability for loss, damage or injury resulting from replies to readers' queries.

To access any listed web addresses starting with http://bit.ly just type these into your browser address line, rather than the search engine and they should work as intended.

E-MAIL:
carmechanicshelp@yahoo.co.uk
Please include your postal address

WRITE (enclosing a SAE):
HELP!* QUERIES, *CAR MECHANICS
KELSEY MEDIA,
THE GRANARY, DOWNS COURT,
YALDING HILL, YALDING,
KENT ME18 6AL

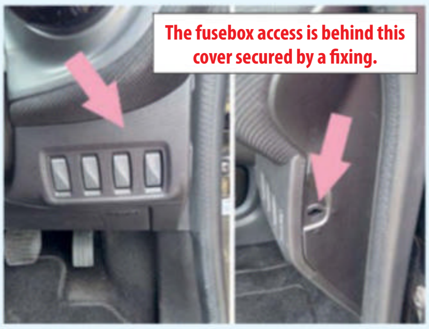
SMART FORFOUR

Fusebox access

Q I have been attempting to access the fusebox on my wife's 2017 smart forfour. I understand this is behind the switch panel on the driver's side of the dash. I have released and removed the small locking button, but I cannot move the switch panel even with light levering with my trim removal tools.

Am I missing something? Your help would be greatly appreciated.

Mark Dawson


The fusebox access is behind this cover secured by a fixing.

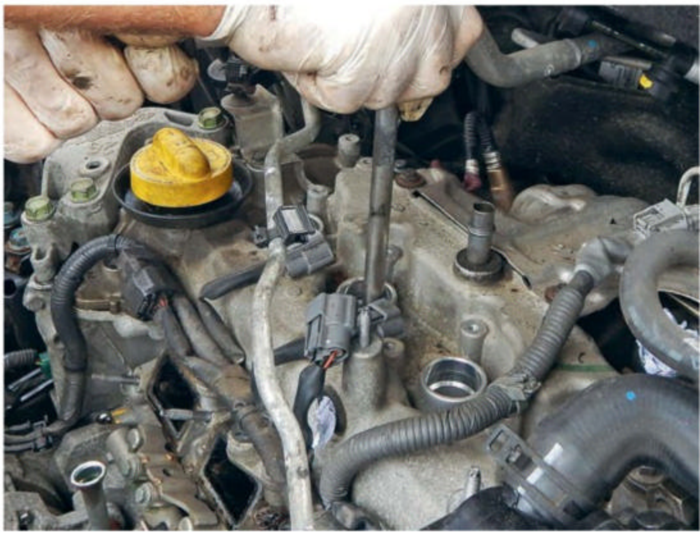
A You are in the right direction, and the panel should remove after releasing the small button on the side of the dash. This can be quite tight, and the securing clips do need a good sharp pull at the side to release, I did find this video https://bit.ly/CMcascF which shows the process and continues to show the access of the fuses.

The smart forfour is designed for the left-hand drive market, and the fusebox access on the LHD vehicle is very simple and needs only the glovebox removing.

It's a shame that they did not swap the fuses across to make the job a little easier.

The problem with the Renault H5F

GT Automotive overview the co-developed Renault/Nissan 1.2-litre petrol.



▶ The Renault H5F, also commonly known as the Nissan HRA2DDT, is a 1.2 4-stroke direct injected engine co-developed by Nissan and Renault. The full aluminium body hosts a five bearing crankshaft and two camshafts controlling 8 valves per cylinder, for a total of 16 valves.

The main issue plaguing the engine is high oil consumption. This has been reported by a plethora of drivers online and even addressed by Renault. In fact, in 2022 a legal case was started against Renault on behalf of the drivers who suffered. This fault has led to a wide range of drivers having their oil drained sooner than expected.

How does excessive oil use affect the engine?

The oil plays an essential role in the engine supplying lubrication for all the vital components, including the camshaft. Overconsumption of oil in these vehicles causes drivers to not even notice that the oil has drained. Once the oil runs low, the camshaft will receive an insufficient level of lubrication. The lack of lubrication will cause the camshaft lobes to rub directly against the valve lifters, ultimately leading to full engine failure.

Additionally, the excessive use of oil can cause the engine to misfire. The immoderate level of oil will find its way into the combustion chamber, delaying the combustion speed and generating extra heat. The higher combustion heat further elevates the risk of damaging critical components such as the exhaust valve.

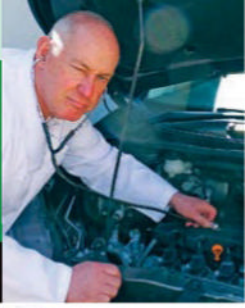
What is causing this?

Despite hours of research, we have been unable to locate a definite cause. One theory is the low air pressure in the intake manifold. However, neither Renault or Nissan have addressed this. The lack of communication from the two brands doesn't instil hope that this issue will be fixed for the foreseeable future.

What does this mean for Renault and Nissan drivers?

The issues surrounding the excessive oil consumption persist. Despite the threat of a formal investigation, the two brands have only recalled some engines. With a variety of applications featuring this engine, excessive oil consumption may be something that some Renault and Nissan drivers will have to suffer with.

Diagnostics Doctor



Steve Rothwell answering your **ENGINE MANAGEMENT** queries

GENERAL

Diagnostic tools

Q As a (very) long-term reader of *CM*, I've always tended to have and maintain older cars for myself and children. I have been lucky that most work has been suspension arm balljoints, exhausts, etc., with very few 'electronic' issues. Although I am an Electronics Engineer by trade (retired), I do like to be able to initially assess an ECU issue.

I know you may have mentioned similar requests before but there does seem to be a lot of discontinued/updated devices around.

I have a basic Autel MS509 reader from years ago that helped me sort a sticky turbo actuator on my 1.2 TSI Ibiza where Google experts mainly suggested new turbo. Graphite lube and working the movement fixed that. Sadly that car new from 2014 was written off by some numpty a few days ago. Airbags deployed, front-end hit and front wheel pushed back 50mm, so I assumed scrap. I was looking for a more up-to-date and capable diagnostic tool.

Current carpool consists of 2011 Octavia 1.4 TSI DSG. Probably SEAT/Skoda petrol DSG to replace the Ibiza, 2005 Astra petrol, Mitsubishi Eclipse auto petrol, 2012 Qashqai dCi and 2003 1.9 dCi Nissan/Renault van.

I do have a good local garage who seems to be genuine at diagnostics and repairs but as a result they are often busy. Hence be nice to at least do a bit more in-depth checking.

Not sure on budget but as usual trade-off between additional features, likelihood of use and price. Reset service indicators could be of use of course. As are continuing free updates.

Be interested in your suggestions. Thanks.

Charlie

A This is of course a question that is often asked, and the budget will be important in choosing the correct tool. I do normally recommend a stand-alone tool which does not need to be connected to a laptop to carry out the diagnosis, and a wide range of these do come with free lifetime updates.

The engine side of the diagnosis is quite easily satisfied with many of the tools on the market, as EOBD protocols have ensured that one tool will cope with many vehicles. The compatibility with ABS, airbags, stability, parking brake release and service reset, is where the problems with compatibility begin.

TOPDON
Services
A/F
BRAKE
OIL
SAS
BMS
BLEEDING
ETS
TPMS
DPF
ADBLUE
AFS
AIRBAG
COOLANT
EGR
GEAR
GEARBOX
IMMO
INJEC
LANGUAGE
NOX
ODO
SEATS
STOP
SUN
SUS
TRAN
TYRE
WINDOWS
ArtiDiag Pro

The Topdon ArtiDiag Pro scanner.

These systems are not standardised and so to obtain one tool to cover all these options will raise the price.

The Launch CRP129 EVO is a comprehensive package supporting Engine, Transmission, ABS and SRS diagnosis with Auto-VIN technology all displayed on a 5in touch screen for £322.80.

The Foxwell NT680 Pro ALL Systems Scan Tool is at this moment £399 at Genden.co.uk and will cover – Oil service reset, Electronic Parking Brake, DPF (Diesel Particulate Filter) functions, Battery replacement/validation functions, Steering Angle Sensor calibration, Throttle Position Sensor calibration, CVT (Constant Velocity Transmission) coverage and Diesel Injector Coding on a wide range of vehicles, and importantly comes with the lifetime updates.

There is a Lite version of the tool, which is the Foxwell NT680 Lite 4 Systems Scan Tool available for £199 – this does have Engine, SRS (Airbag), ABS and Automatic Gearbox plus Oil Service Reset and Electronic Parking Brake functions, but this has a reduced range of the more professional tool.

Foxwell
Main Menu
AutoVIN
OBDII
Diagnostic
Maintenance
Settings
Data Manager
Update
AutoMaster Pro
F1
F2
F3
Back
Enter
Help

Foxwell NT680 Pro ALL Systems.

Another good option is from the Topdon range OBD diagnostic tools. The Topdon ArtiDiag Pro at £410 is a very capable tool which covers 31 maintenance service functions and comprehensive system scanning for over 100 makes and models. It also has the benefit of a larger screen that can display four data streams. This, when used to display live data, is a great asset. This tool does only come with 2-year free updates.

The choice gets wider as the budget increases, but as the tools get more professional, the free updates disappear and so this is another cost that needs to be considered.

If you do have a smart phone, the other option that is now on the market and offers a range of tools that use the power of the smartphone, connected with an EOBD Bluetooth adapter. These tools such as the EOBDeleven are relatively cheap starting at around £70, and offer the opportunity to purchase the Pro and Ultimate plans. The EOBDeleven is concentrated to cover BMW and VAG vehicles at this time, and so may not be ideal for you fleet.

Another of the EOBD Bluetooth options is mycarly.com. This comes with a basic plan or a premium plan and separate software can be purchased to suit individual vehicles – this may be a good option.

CLASSIC DIAGNOSTICS

Exhaust gas analyser

Q I have two classic cars. One with Bosch K-Jetronic and the other with a carburettor. I want to be able to accurately adjust the CO levels. I borrowed from a friend the Gunsons brand but found the reading to vary substantially during the tests so want something more accurate.

I have done searches on the internet and apart from the very expensive MOT approved ones, there seems to be a couple semi-professional hand-held ones being marketed for motor vehicles. These are Bridge Analysers – American and Kane EGA 1, 2 all the way to 5 – British which measures the different gasses.

The latter cost upwards of £750, but before I make the jump, it would be good to get some independent views on what is out there and whether I should also go for a meter that tests HC, O_2, NO, NOx, CO_2, HC, etc. Any help would be appreciated.

Shabaz Mohammed

The Gunson G4125 gas analyser.

A **Most garages do now I believe use the MOT test equipment and smaller units are not utilised in the way they were in the past. The machine you choose will depend on the reason that you are choosing to purchase an exhaust gas analyser. If you are purely getting one to ensure that the mixture is correct, then the CO levels will be the important factor. If you are looking into more detailed results and need the hydrocarbon readings to analyse the unburnt gasses then you would need a more professional unit, although many base units do read the two gasses.**

The Kane EGA Exhaust Gas Analyser range are very good units but at a cost of around £700+, it would depend on the usage that you intend for the analyser. If you were looking at NOx readings these would normally only be checked when the vehicle was on a rolling road with the vehicle under load, and so unless these were the conditions you were wishing to test under, then the ability to read NOx would not be required.

A high NOx reading is normally the result of lean running, and this could be detected in the O_2 output for normal tuning purposes. With the introduction of more advanced injection systems which do have their own O_2 sensor in the exhaust, the need for exhaust gas analysers at the base level has decreased and there are no longer the range of units around that once were available.

The Gunson G4125 unit is a single gas and does have a lower accuracy than the units used for MOT, and this is reflected in the £270 price tag. The next stage up is really either the Bridge or the Kane units you have mentioned, and the choice does come down to the need for accuracy at a higher level.

GENERAL

Training books

Q Hopefully you can point me in the right direction as I have just bought a new scanner – an Autel Elite Pro 2 with the jbox programming VCI but I'm struggling to find info on using this tool.

What I'm looking for is a book or training course on using the scanner to its full potential. My other tool, a Marxists 908 recently died, so I was looking for a tool that was better and got the Elite with two years of updates for a very good price – now that I have it I would like to get involved in more than code reading if possible but can't seem to find much info.

I recently had to replace a BMS on a Ford Focus which involved sending a second-hand one-way to be reprogrammed from the old one. Is this something that could be done with my Autel tool and I have an ABS module to look at – would it be possible to recode a second-hand one from the old one? Hope you can point me in the right direction, thanks.

Tony Deacon

A **Getting to grips with a new diagnostic tool can be quite a steep learning curve, and understanding the menu options and the routes to take to achieve the desired goal can take a little time.**

There is a great deal of information to be gleaned from the 130-page manual that you should have received with your Autel diagnostic scanner. The section 4-10 Programming and Coding does cover many aspects of using the scanner.

Autel do also supply support and online training content and assistance, that you can view in your own time and at your convenience.

Details can be found at https://www.autel.uk/support-training/ or you can email support@autel.uk for further information or use the telephone support line 03330 129959 for any specific information.

FORD TRANSIT

Live data reading

Q I have a 2010 Ford Transit 2.2 TDCi. When looking at the live data, the MAP sensor has a temperature sensor built in which comes up as temp 2. I have got a reading of 94.78°C when the engine is cold.

I changed the sensor, but I have still got the same temperature reading. The reading from the intake air temp is only 24°C – is that reading correct or is the ECU reading it wrong as we have an intermittent cutting out issue but no fault codes.

Mark Deane

A **The details I have show that the air temperature reading should be read from the boost pressure sensor (also called the MAP sensor). Having replaced this I would suspect that the problem will be within the ECU. It would be worth checking the voltage reading at the ECU which should be 4 volts at terminal Aa2 and the terminal Af1 should be an earth and so should have a zero-volt reading.**

The wire colours for the temp sender are Blue/Green and Orange/Yellow – and I would also check the continuity on these to ensure that another circuit is not shorting into the system.

If these checks prove that the wiring is not an issue, then sending the ECU off for testing would be the best solution.

MINI COOPER

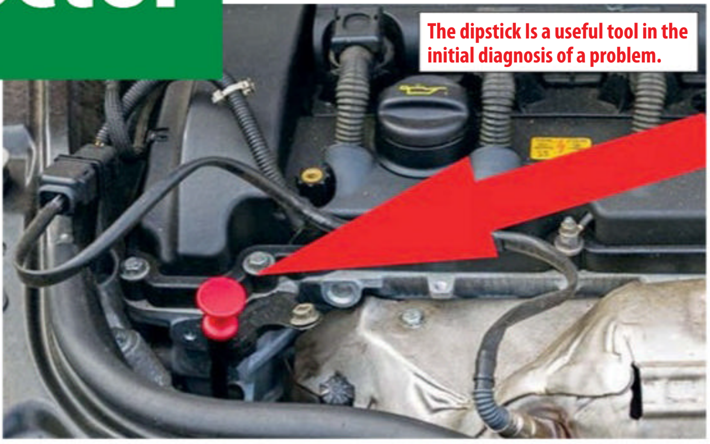
Idling problem

Q I am not a mechanic, but I do like to try and do some work on my own cars. I noticed the reader problem in your August 2024 issue with the MINI. I have a 2008 MINI Cooper, N12 engine R56 model – it has 69,000 miles on the clock. I recently had an issue with the car not idling – it was OK when cold but soon as it warmed up it would cut out when you stopped at lights, etc.

I scoured the MINI forums for the answer and ended up spending a bit on parts. Doing, the work myself, I replaced the MAP sensor, replaced the crankcase breather pipe, replaced the PCV and took out both Vanos solenoids and cleaned them, but no luck. I then read a thread which went through all of the above and at the bottom of the thread, a chap stated he had similar problems – and neither BMW or a MINI specialist could sort it. He then gave the reason for the fault.

My OBD reader was saying Mass Air Plausibility and threw several other fault codes.

Anyhow because of the chap I mentioned above, I checked the oil level on the car, and found it was low, I topped up the oil and hey presto the fault disappeared.



The dipstick Is a useful tool in the initial diagnosis of a problem.

Basically I just wanted your readers to know that if they have issues of poor running with a BMW MINI, they should check the oil level first – it will save them a lot of hassle and money. The reason for the codes I believe was to do with the Vanos solenoids not getting oil, so they were causing issues with the running of the car and throwing all sorts of misleading fault codes.

Micheal Woodcock

A This is definitely worth a mention and a reminder that the basics should always be checked first. The quantity and the quality of the engine oil will have an effect on the efficient running of the engine.

If the VANOS system is not fully fed with oil, then the cam timing will be incorrect and can give the symptoms you had.

Your experience is also a reminder that often when fault codes are read, they can be the result of another problem within the engine and looking at all the faults code to fully understand the situation before replacing individual components is recommended.

This is a good reminder to all that checking the oil level is an important activity.

SEAT ALHAMBRA

EGR fault codes

Q I'm hoping you can advise on a couple of fault codes on my 2012 SEAT Alhambra 2.0 TDI. The first one 4807 (P0401)- EGR Insufficient Flow is pretty obvious. It's been on and off for a few weeks now. My normal course of action would be to remove the EGR, clean and then refit it. Unfortunately, it doesn't seem as straightforward on this car. It's buried at the back of the engine and is part of the EGR cooler. It's a job I'm willing to tackle but need some guidance on how best to approach it.

The second code 9632 (P203B) is a bit more of a head scratcher. Reductant Level Sensor. Looking at the VCDS printout, it appears to me that the level is at 40.25%. My first thought was to top it up and hope for the best. I've no idea what type of level sensor is used and can find very little useful information on the internet.

I'm usually happy to tackle the majority of work on my 'fleet' – 2010 Golf GTD, 2012 Alhambra, 1993 Corrado VR6 and a 2010 Triumph Street Triple R.

I hope you can point me in the right direction before I have to resort to taking it to a garage and taking on another mortgage. Thanks in advance.

S Blair

A The first code P0401 is as you have said a restricted flow and can be caused by a faulty EGR valve or a blockage in the system. The unit is placed in a particularly difficult area at the back of the engine and the book job time given of 2.5 hours is very tight and possible does not include the required DPF removal.

The EGR valve comes complete with the cooler and is large and difficult to remove.

If not already done so it may be worth using a system cleaner first such as Wynns extreme diesel fuel system EGR valve and DPF cleaner additive – if the system is not too badly blocked this may do the trick.

The second code does refer to the Reductant Level Sensor circuit indicating a range or performance problem. The sensor is in the top of the heater element cup in the reduction agent tank.

The first thing to check would be the connections to the sensor and to access the unit you will need to remove the rear bumper. Once this is off, the tank is accessible and it should be possible to see the connections.

If cleaning the plugs does not remedy the fault, then this may need the unit replaced, which would need to be the complete heater element cup assembly.

VAUXHALL MOKKA

Error code

Q Always appreciate your help – would you know what the likely repair would be for the error code P0171 on my 2017 Vauxhall Mokka X 1.4 turbo. I can clear it, but it says permanent code, although my scanner is a cheapie.

Paul Ashford

A The code P0171 is indicating that the system is too lean, and this can be for several reasons. The first points to check are that there are no air leaks in either the exhaust or the induction system. It can often be the case that a small leak in the exhaust system that is not noticed can be the source of this code.

It is also the case that this can be a small air leak in the induction system, this could be at any point between the air filter and the inlet manifold or could be a leak from a manifold pipe or the EVAP system.

If after careful examination no air leaks can be found, then the next step would be to check the MAF sensor, if this is reading incorrectly then this can be the source of this code.

Removing the MAF sensor and cleaning it using a dedicated spray or isopropyl alcohol may improve the situation. A dedicated spray is a good option and when cleaning the hot wire element should not be touched. Once the element has been cleaned it is also imperative that the element is fully dried before the engine is started.

The code can also be set due to a failing O_2 sensor, but this is a less likely scenario and would be the last step to take. I would expect these steps to rectify the problem.

VAUXHALL ZAFIRA

Three codes

Q I have a 2013 Vauxhall Zafira 1.8 petrol. I emailed in the past regards a fault which I never got to the bottom of regarding three codes – two of them the same as today, and one was a lean code but now a rich code instead. Ultimately some carb cleaner down the intake cleared the problem and the light never came back on. However, the engine has recently started rough running when at approximately 50 to 80% throttle. It felt like the engine was retarded, however there was no engine light or codes.

I changed the VVT solenoids (both) as they looked rusty and original, and I was thinking one was sticking or failing. However, this made no difference, and I rescanned it to find these three codes as shown on the sent photo. Ignore the clutch switch as I recently had a master cylinder fail, and it needs a tiny bit of adjustment. If the pedal is moved up a mm it changes.

As I have a minor oil leak around the cam cover gasket I began to wonder if the engine has a PCV problem. I'm not a professional just a keen DIYer over the years. I purchased a cheap smoke machine as I also own a Meriva B 1.4 turbo petrol renowned for its multiple PCV issues.

However, I decided to smoke test the Zafira as I have previously had lean codes and now rich codes. Please see video and would appreciate your input.

Matthew Fliege

A Thank you for sending the video which shows the smoke testing you carried out. This can be seen at the bottom of the page at this weblink https://bit.ly/CMzCjrc. The valve in the cam-cover is a Positive Crankcase Ventilation valve, and this will be open to vent the crankcase when the pressure internally is positive, it should close when the negative ventilation caused by a depression in the induction system is created. This will with the engine off give the results that you have showing the leaking of the smoke.

One of the methods of checking the valve is to listen at the vent points externally on the cam cover in the area of the centre spark plug well. With the engine running, if a vacuum can be heard and air is rushing past these vents, then this will normally be due to the PCV valve failing. Another common indication is a resistance when removing the oil filler cap, or dipstick, with a resulting rush of air into the crankcase.

The codes P0068 (04 and 02) are both pointing to an MAP sensor/air flow throttle correlation fault, and this can be due to unmetered air entering the induction system. The code P0172-02 is showing that the system is too rich and can be due to a blockade in the induction system.

One of the common failure points that can cause these codes is the EVAP cannister system, and if not checked I would certainly investigate the possibility that this as the source of the problem.

Other causes can be an induction air leak, but you have covered this by using the smoke tester, or a possible fuel pressure or injector problem. As the carb cleaner did originally appear to remedy the issue, if no faults can be found with the EVAP system I would consider using a fuel system additive with a view to attempt to internally clean the injectors.

Diagnostics Doctor

Diagnostics Doctor is a **FREE** helpline service for *CM* readers – including trade readers – who are struggling with diagnostic/engine management related faults.

Steve Rothwell will answer all your queries. He will need as much detail as possible: **MAKE, MODEL, YEAR, ENGINE CODE** and **NUMBERPLATE** of your vehicle – and the type of management system installed. Obviously, Steve will not be able to assess the vehicle up close, so his answer will be on the basis solely of your description. This is a FREE service and it may take some time to respond to certain problems. If you would like to receive a personal response via post, please enclose an SAE.

e-mail:

cmdiagnostics@yahoo.co.uk

Write to:

DIAGNOSTICS DOCTOR
CAR MECHANICS,
KELSEY MEDIA,
THE GRANARY, DOWNS COURT
YALDING HILL, YALDING,
KENT ME18 6AL

Common abbreviations

ATS	Air Temperature Sensor
AFM	Air-Flow Meter – not a MAF type (see below). It could be, for example, a vane type
CAS	Crank Angle Sensor
CPS	Crank Position Sensor
CTS	Coolant Temperature Sensor
ECT	Engine Coolant Temperature
ECM	Electronic Control Module
ECU	Electronic Control Unit
EGR	Exhaust Gas Recirculation – meters exhaust gas back to the intake manifold
EML	Engine Management Light
EMS	Engine Management System
EPC	Electronic Power Control
FCR	Fault Code Reader
HT	High Tension – ignition output to the spark plugs
IAV	Idle Air Valve
ISCV	Idle Speed Control Valve – usually operated by a motor controlled by the ECU
LOS	Limited Operating Strategy – if the ECU detects a malfunction, it runs a programme to allow the car to still go, but at reduced efficiency
MAF	Mass Air-Flow meter
MAP	Manifold Air Pressure
MIL	Malfunction Indicator Lamp
PCV	Positive Crankcase Ventilation – takes crankcase gases and recycles back to the inlet system
TBPS	Turbo Boost Pressure Sensor – used by the ECU to regulate turbo output
TPS	Throttle Position Sensor
VSS	Vehicle Speed Sensor
WOT	Wide Open Throttle

Electronic Diagnostics

Ford Fiesta Zetec 1.25

Tracing and fixing faults in electronic engine management systems

How potentially problematic can Ford's most popular small hatchback be with a 1242cc Zetec engine? **Rob Hawkins** discovers a varied list of issues.

Ford's fifth-generation Fiesta was introduced in 2002 and was the first of the Fiesta line-up to feature ABS and passenger airbags as standard. By 2005, it had been facelifted (known as the Mk5.5) and included toys such as electric folding door mirrors and automatic headlights on some models – the Freedom model shown here even has electric heated door mirrors.

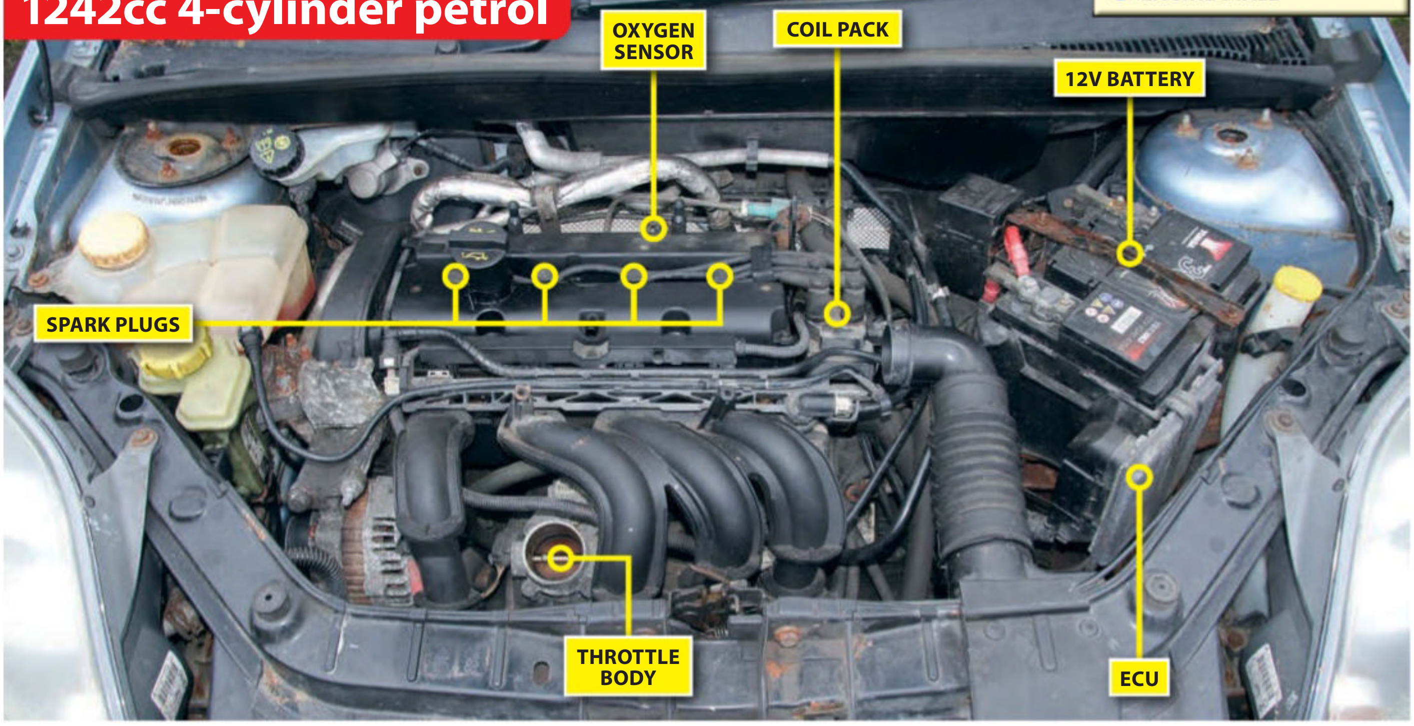
Whilst Ford's range of Zetec engines had been a common sight for over a decade when the Mk5 Fiesta was introduced, the smaller 1242cc was a later arrival and powers the example shown here. As we discovered, potential problems mainly relate to sensor and ancillary failure, of which some are quite mysterious.

For example, Mark Shipman at AES has found that if the engine stalls when the vehicle is slowing down to stop, the issue can be with an electronic speedo module. He's also discovered that water ingress can lead to problems with the alternator, which isn't so straightforward to identify and fix because it's a smart charging system (we've outlined this in detail but will look at it in depth later this year in a dedicated diagnostics supplement). And the simple act of cleaning inside the throttle body can result in running issues.

TYPICAL FAULTS

❶ CHOKED THROTTLE BODY
❷ FAILED HEATER CIRCUIT
❸ CONDENSATION
❹ ROTTEN CORE PLUGS
❺ CHAFED WIRING
❻ ENGINE STALL

1242cc 4-cylinder petrol



TOPDON®
ARTIDIAG600 S: BEYOND THE BASICS
https://www.topdon.com | oscar@topdon.com

IN ASSOCIATION WITH TOPDON

Maintain vehicle health better with ArtiDiag600 S

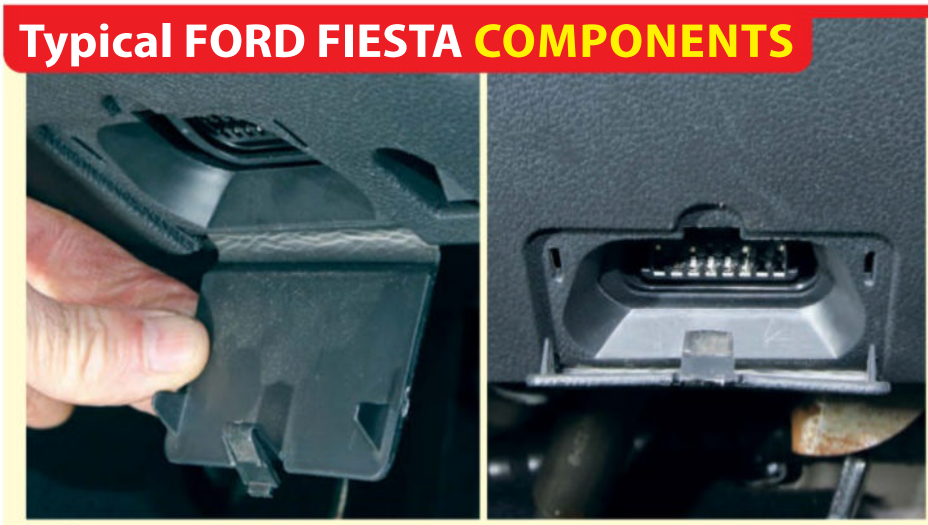
▶ Staying proactive with vehicle maintenance is essential for preventing costly repairs. TOPDON's ArtiDiag600 S automotive diagnostic tool offers the perfect solution for drivers who want to stay in control of their vehicle health without the ongoing costs.

This powerful tool covers four major systems of your vehicle, including engine, transmission, ABS, and airbag diagnostics, allowing you to detect and address problems early. With 9 essential maintenance functions, including oil reset, BMS reset, throttle adaptation and more, it's simple to keep the vehicle in optimal condition.

The AutoVIN feature automatically detects a vehicle's make and model, so you can get started quickly without manual inputs. With free lifetime updates, the ArtiDiag600 S evolves alongside your car, always providing you with the latest functionalities.

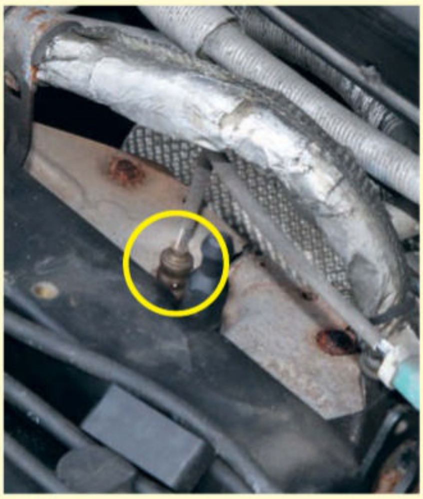
Stay confident in your car's health and always be prepared for the road ahead.

Typical FORD FIESTA COMPONENTS



1 The EOBD port for connecting diagnostic equipment is found on the lower half of the dashboard, on the driver's side. Look for a small plastic panel which is hinged along the bottom edge. Release a plastic clip along its top edge to open the panel and see the 16-pin port.

2 There's an ECU mounted in front of the 12V battery. Wiring issues are a known problem (see *Fault 5*). Check the battery's terminals are clean and secure. When using diagnostic equipment, connecting a booster pack to the battery will help to reduce the risk of voltage drops and anomalies.



3 At the back of the engine bay, there's the top of the exhaust manifold and a pre-cat oxygen sensor (circled). See *Fault 2* for more details on common problems that can arise with these sensors.

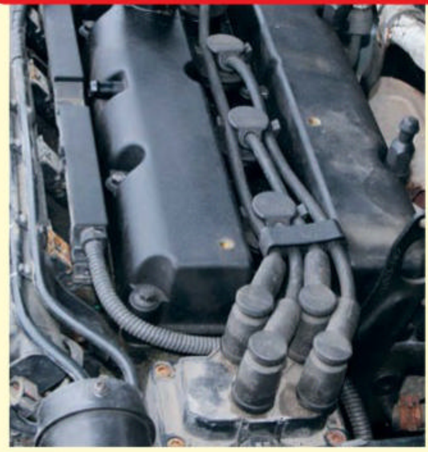
DURATEC
Ford

4 The air filter housing doubles up as an upper engine cover, which can be quickly removed to access more of the components across the top of the engine. Undo a couple of fastenings at the front of the housing and detach two induction hoses – one to a throttle body and another to a feed pipe routed to the front of the engine bay.

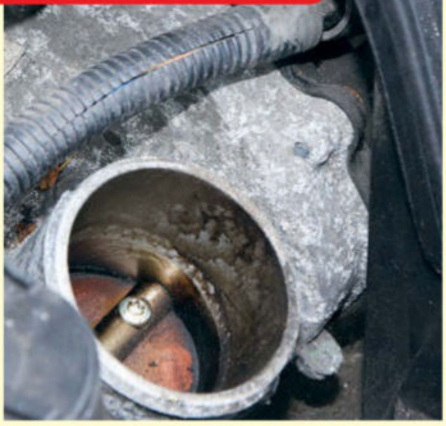
TOPDON®
ARTIDIAG600 S: 4-SYSTEM DIAGNOSTICS
https://www.topdon.com | oscar@topdon.com

Thanks to
AES York Limited
01904 780149
autoelectricsyork.co.uk

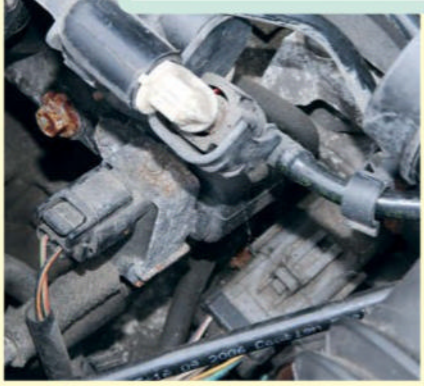
Typical FORD FIESTA COMPONENTS



5 With the air filter housing removed, the single coil pack and its HT leads can be seen, which are positioned across the top of the engine. See *Fault 3* for problems associated with the coil pack.



6 There's a throttle body at the front of the engine bay, which has an induction hose/pipe connected to it from the air filter housing. There's also a throttle position sensor (TPS) attached to it and a manifold absolute pressure sensor (MAP) nearby.



7 This vacuum-controlled switch is located to the left of the vehicle battery (when looking from the front of the vehicle at the engine bay). It operates a set of flaps inside the inlet manifold which alters the airflow into the engine. It's a type of variable induction system to help improve performance.

TECHNICAL SPECIFICATIONS

Engine	1242cc 4-cyl twin-cam petrol
Engine oil grade	5W-20 or 5W-30 fully-synthetic (other grades are recommended, depending on climate)
Oil classification	WSS-M2C913-C
Oil capacity/schedule	3.8 litres with filter every 12,500 miles or 12 months
Brake fluid	Super DOT 4

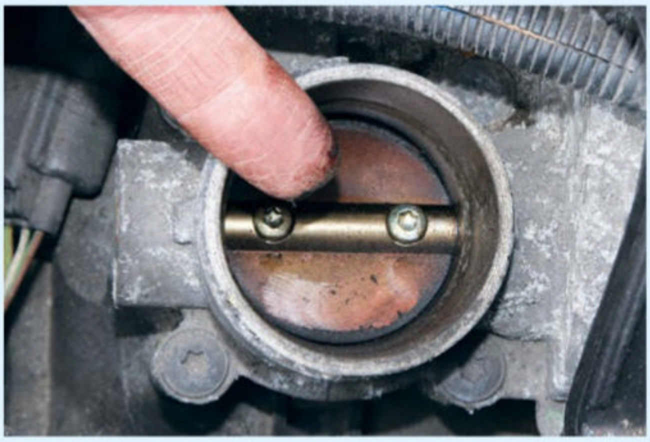
TORQUE SETTINGS	
Sump drain plug	28Nm
Spark plugs	15Nm
Crankshaft position sensor	9Nm
Camshaft position sensor	9Nm
Knock sensor	20Nm
Road wheels	90Nm

Typical FORD FIESTA FAULTS

CHOKED THROTTLE BODY

FAULT 1

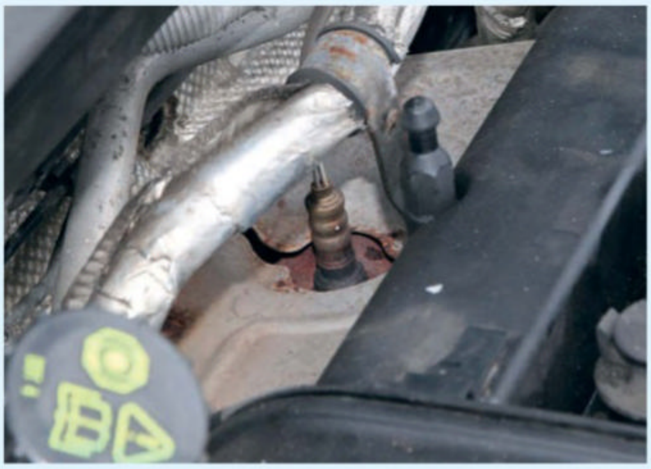
▶ The butterfly inside the throttle body gets gummed up with deposits, which can be cleaned out, but this can lead to running issues because Mark Shipman at AES says the throttle position sensor self-adjusts and learns, so cleaning it will require its position to be reset with diagnostic equipment.



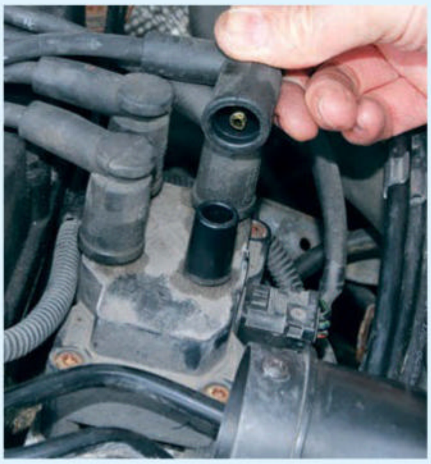
FAILED HEATER CIRCUIT

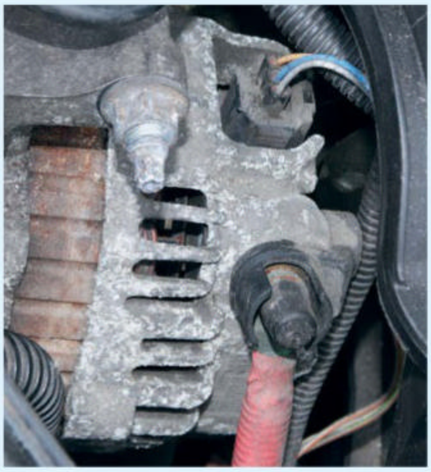
FAULT 2

▶ There's a pre-cat oxygen sensor at the back of the engine bay, installed into the exhaust manifold. Mark has found its heater circuit can fail, resulting in problems such as high emissions and an engine management light appearing on the dashboard. Fortunately, it's straightforward to access and costs between £40 and £100, depending on the manufacturer and supplier.



TOPDON®
ARTIDIAG600 S: 9 MAINTENANCE SERVICES
https://www.topdon.com | oscar@topdon.com

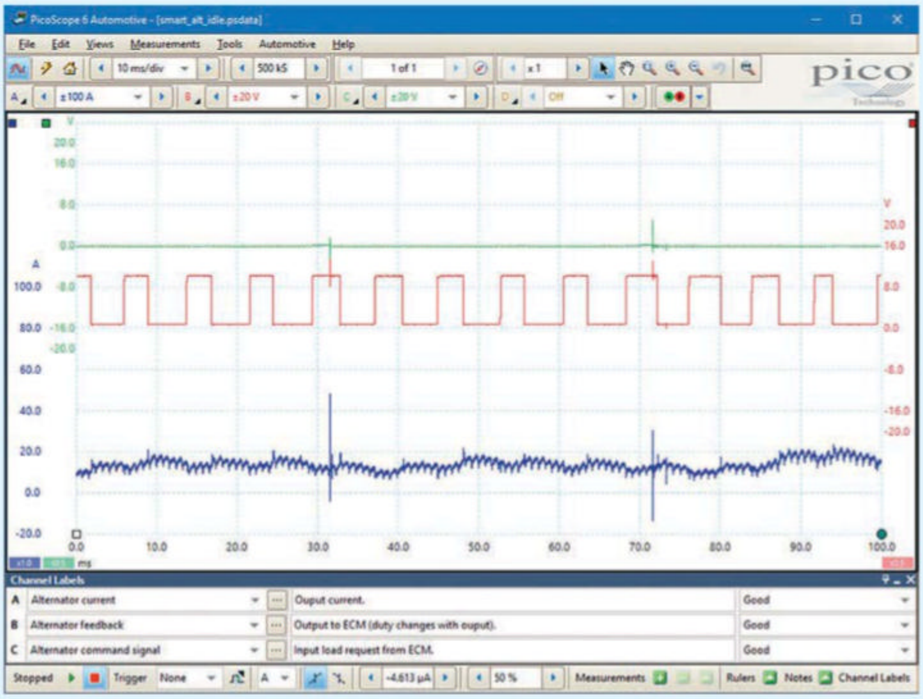




CONDENSATION

FAULT 3

▶ Moisture can get into the coil pack, which Mark has found starts at the ends of the HT leads. This water ingress can mysteriously result in the charge warning light appearing on the dashboard. The alternator has a smart charge feature, which fails because of the water ingress into the coil pack, meaning the battery is recharged at 14V, causing it to fail and overheat (boil). Mark has found that most people fit a new battery, only for the problem to repeat itself. Instead, he uses an oscilloscope to check the output of the alternator and recommends to periodically detach each HT lead at the coil pack (without the engine running) to look inside for condensation.

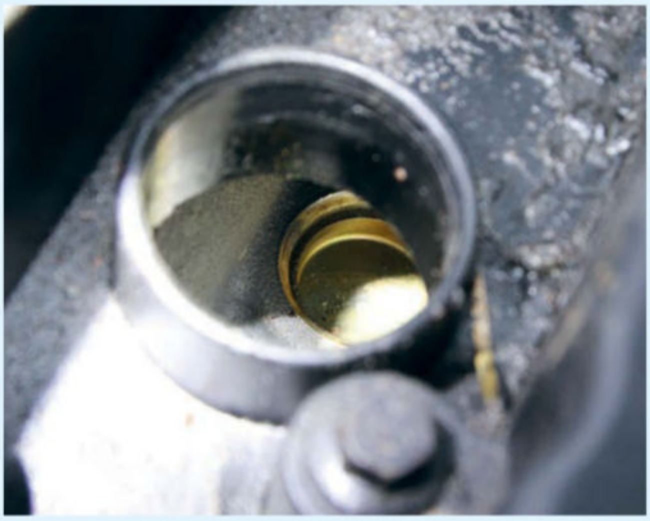

PicoScope 6 Automotive - [smart_alt_idle.psdata]
File
Edit
Views
Measurements
Tools
Automotive
Help
10 ms/div
500 kS
1 of 1
x1
pico Technology
±100 A
±20 V
±20 V
Off
V
20.0
16.0
8.0
0.0
-8.0
-16.0
-20.0
A
100.0
80.0
60.0
40.0
20.0
0.0
-20.0
0.0
10.0
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
ms
Channel Labels
Stopped
Trigger
None
A
-4.613 µA
50 %
Measurements
Rulers
Notes
Channel Labels

A	Alternator current	Ouput current.	Good
B	Alternator feedback	Output to ECM (duty changes with ouput).	Good
C	Alternator command signal	Input load request from ECM.	Good

ROTTEN CORE PLUGS

FAULT 4

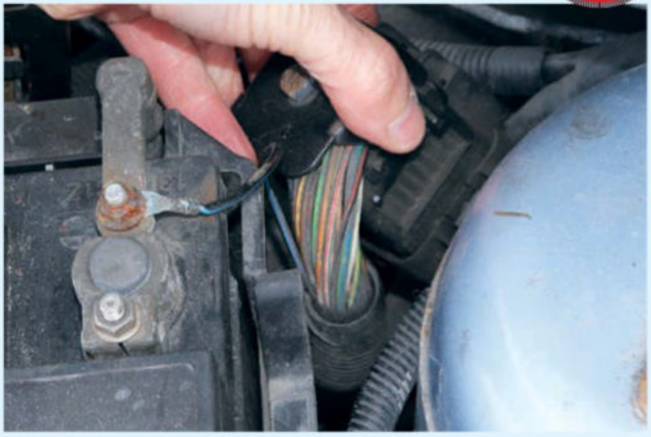
▶ If the engine coolant needs to be regularly topped up, but no leaks can be found and the head gasket hasn't failed, then one common cause concerns the core plugs across the top of the engine. If they corrode, coolant escapes and runs into an adjacent spark plug hole. They can be visually inspected by removing the air filter housing and HT leads (mark their positions), then shining a torch onto them – they are next to the spark plugs across the top of the cylinder-head.



CHAFED WIRING

FAULT 5

▶ Routinely inspect the condition of the wiring near the vehicle battery because it can become chafed, resulting in poor earth connections and several electrical issues.



ENGINE STALL

FAULT 6

▶ If when the vehicle stops, the engine stalls every time, Mark has discovered the electronic speedo module is often to blame. He suspects it cannot determine fuelling when slowing down to stop, so the engine stalls.

TOPDON®
ARTIDIAG600 S: BEYOND THE BASICS
https://www.topdon.com | oscar@topdon.com

SAVE OVER £31 ON A CAR MECHANICS SUBSCRIPTION

EVERY ISSUE INCLUDES

- Essential advice
- Invaluable motoring resource
- In-depth tutorials and guides
- DIY maintenance

Reasons to buy

■ Receive your first 6 issues for just £15!
■ Save money on the shop price
■ Hassle free - never miss an issue
■ Delivered directly to your door ■ Cancel at anytime

Terms & Conditions: *UK Direct Debit of Continuous Credit Card offer, you will pay £15.00 on annual Direct Debit or Continuous payment, savings are based on the standard basic rate, which includes the cover price of £4.70 plus Kelsey Media's standard postage and packing price per single issue for 12 months. Offer end 31st March 2025.

NEW YEAR
SALE

13 pages of your car problems solved by our experts
CAR MECHANICS
SAVING YOU MONEY SINCE 1958
ZF Autobox Service
Jaguar six-speed
Window Regulator
Porsche Boxster
DIAGNOSTICS
Volvo XC90 D5
VW 2.0 TDI
DMF renewal
WIN Clarke Gas Heaters
3 prizes worth over £353
WORK SAFELY
10 PAGE SPECIAL
on DIY CAR MAINTENA
Preparation of your working environment
Procuring & maintaining tools
Using tools & equipment correctly
Plus, safety aspects to:
Metalwork
Chemicals
Batteries
WORKSHOP
BMW 1-Series
Front wing swap
SERVICING
Ford Mondeo
2.0 TDCi tasks
USED CAR BU
Land Rover Freelander
2006-2014 models

6 issues FOR JUST £15

Only £2.50 an issue!

Scan me

EASY WAYS TO BUY YOUR SUBSCRIPTION

GO TO **SHOP.KELSEY.CO.UK/NY25CME**

SCAN THE **QR CODE** AND GO DIRECTLY

CALL 01959 543 747 AND QUOTE 'NY25CME'

GSF STORY

What DIY motorist or mechanic hasn't heard of Euro Car Parts and GSF? Sukhpal Singh Ahluwalia started the former and now he intends to make the latter even better! Which has good news for us all says **Alan Anderson**.

What do you do after creating one of largest and best-known parts suppliers in the UK out of nothing – and then end up selling it? Simple. You do it all over again.

Sukhpal Ahluwalia (above) started what evolved into Euro Car Parts when he was just 17 back in the late '70s, opening a small corner site motorists shop called Highway Autos, ironically around the same time Stan West launched Vee Wee – a parts business primarily for Volkswagens.

In 1987, Stan's company became 'German and Swedish' because the business specialised in those brands of car parts. In 2000, 'German and Swedish' was acquired by Andyspares and soon added French vehicles to its product offering. The company was renamed German, Swedish and French – GSF for short – as a result.

By this time Highway Autos had been rebranded Euro Car Parts, expansion and product services diversification quickly followed resulting to a buy out in 2011 by the LKQ corporation, for a reported £225m.

GSF grew also steadily organically and through acquisition until 2015, when it merged into The Parts Alliance, itself formed in 1999. In 2014, private equity firm Hg Capital acquired The Parts Alliance central organisation and a year later, GSF Car Parts amalgamated into the Parts Alliance Group rebranded as GSF Car Parts in 2021.

In 2023 LKQ Corp acquired Uni-Select and as part of the deal, LKQ Corp was required by the Competition and Markets Authority to sell GSF as it already owned Euro Car Parts in the UK.

GSF CAR PARTS
GSF CAR PARTS
GSF CAR PARTS
CUSTOMER ENTRANCE
OPENING HOURS
WE'RE OPEN TO PUBLIC & TRADE

Comeback

Enter Sukhpal Ahluwalia acquiring the GSF Car Parts business, including all 180 of its company-operated stores.

What attracted him to the company, bearing in mind he built up the ultra-successful ECP company from scratch and was essentially starting all over again against a well-known and well-established market leading competitor?

"I started in the motor parts business when I was just 17. It's in my blood, and that never left me when I sold ECP in 2011. After selling ECP, I started planning my return to India and spending more time on the ground there and invest more time in my charity work.

"My detailed knowledge of GSF stretches back to the eighties and my friendly rivalry with GSF's founder Stan West. Over the years, GSF had many different management teams and strategies – but constantly suffered with a lack of investment. But I never thought of GSF as starting all over again. I knew the strength of the business – after all, when I was building ECP with the team, GSF had always been our toughest competitor.

Since the acquisition GSF's fortunes have risen and Ahluwalia says he sees the hidden potential of GSF to make it even better than the company he first built up from scratch.

Ahluwalia enthuses, "When we got

under the bonnet of the business, we saw that GSF was a sleeping giant with one of best teams and brands in the business, but that it had been starved of capital and investment for years.

"From the centre, we have opened new branches (15 so far in 2024), increased stock profiles and disposed of obsolete lines, added hundreds of new delivery vans, replaced many ancient PCs, set up regional distribution centres and massively improved our cataloguing and POS systems.

"Most significantly, we have invested in a 500,000-sq-ft warehouse near Wolverhampton, which will give us 750,000-sq-ft of floor space in total with a new mezzanine floor. This will ultimately replace two much smaller central facilities and enable overnight stock replenishment for every GSF branch.

Ahluwalia adds: "We're frankly obsessed with delivering fast, friendly and easy-to-deal-with service that finds the right parts – in short, service that gets it right every time. After all, independent garages need to maximise income from limited workshop space to prosper."

Further expansion is also on the cards. "We have plans and budgets for a significant increase in our branch footprint, which is already 200-strong. This is driven by our customers' needs for fast, reliable just-in-time deliveries. We have already added 15 branches so far.

"We want to be wherever our customers are. We want our customers to know that they can always rely on GSF to get their parts and supplies to them as quickly as possible. We have an additional 15 branches planned for this year.

Challenging times

After dealing with the fallout of COVID and the continuing conflict in Ukraine, the UK aftermarket is just emerging from a turbulent time, but Sukhpal remains extremely optimistic.

"The future for the UK independent aftermarket looks extremely bright. The average age of the car parc has increased from five years to 10 years in a generation. Plus, eight out of ten workshop entries, for servicing, repairs, and MOT, are to independent garages.

"At the same time, vehicle mileage is well above pre-COVID, whereas public transport is significantly down. Today, people clearly value the convenience and comfort of point-to-point mobility.

"Although the technical requirements are increasing every year, we and others can assist this transformation with cost-effective training and equipment. And especially while their franchised-dealer competitors are struggling to contain their costs and market effectively.

"Of course, the increased share of pure battery-electric vehicles will gradually change our business, but research shows that the share of BEVs in the 3+ year old parc will remain below 10% until well into the 2030s.

"The main challenges are from the vehicle manufacturers themselves, whose strategy seems to be making life difficult for independent aftermarket competitors. Fortunately, we have the vigorous support of organisations such as IAAF to defend our sector.

"We also need to answer why people should want to work in the independent aftermarket. There are many reasons, but I like to remind everyone of the vital role we play in enabling low-cost mobility – for driving to work, taking kids to school, and delivering parcels. This is a valuable service to society.

The battle lines have been drawn. "I'm going to put every ounce of effort into GSF. This will be an important part of my legacy before returning to India. I'm going to give it everything that I've got." Which surely has got to be great news for anybody after a replacement part.

CAR MECHANICS NEXT MONTH

CLUTCHES

- How clutches work and what goes wrong with them
- How modern clutches are replaced
- Dual mass flywheels and self-adjusting clutches considered
- Concentric Slave Cylinder renewal detailed
- How to make your clutch last longer

APRIL 2025 issue out MARCH 21st

PRODUCTS ON TEST

Oil Filter Removal Tools

- **NEW PROJECT CAR – Mazda MX-5**
- **Porsche Cayman S front struts**
- **Buying used – Ford Mustang SS550**
- **MINI Cooper 1.5 service**

Vauxhall Vivaro DIAGNOSTICS

To ensure you receive every issue of *Car Mechanics*, place an order with your local newsagent. Once setup, your copy will be held for you to collect, saving you the time and the frustration of having to search the newsstand. Some newsagents may even offer a home delivery service, making it even easier to obtain your copy. So don't miss an issue, simply complete the form below and take to your local newsagent today.

NEWSAGENT ORDER FORM

☐ Please reserve/deliver* a copy of ***CAR MECHANICS*** on a regular basis, commencing with the .... issue for

Mr/Mrs/Ms.............................. First name.............................. Surname ....

Address ....

Postcode .... Daytime Tel No ....

Andrew Rolland

Special Contributor

BMW problems

IN ANDREW'S GARAGE

2013 BMW 535i F10 Now 12 years old and owned for the last nine years. My daily driver with 72k on the clock and a long "to do" list.

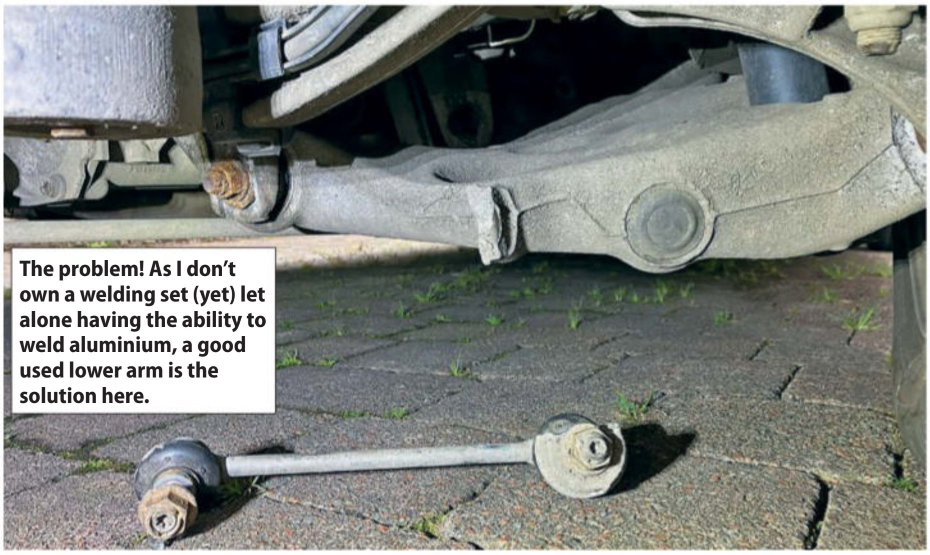
2015 Ford Kuga 1.5i AWD Bought at nine months old with 1k on the clock for less than 2/3rds list price. Wife and family transport so needs hoovering regularly!

Do you remember the friend of mine that I introduced you to in *Our Cars* in the December 2024 issue with the beyond rusty rear wheel hub nuts on a 2011 BMW 318i Coupe? Well, Rob came to me, again, with another BMW problem – this time it was with his 2015 BMW F11 520d estate.

His problem started when his wife was negotiating a tight roundabout, she accidentally activated the "LIM" function via a steering wheel button. This LIMits the car to 20mph if activated below 20mph or if you are going faster, it sets your top speed as that. As she pulled away from the roundabout, the F11 wouldn't go with its usual gusto. Being the sensible lass that she is, she pulled off the main road to solve the problem. As any BMW driver will tell you, most problems are cured with a switch off and back on again, which is exactly what she did. And in doing that, cancelled the LIM setting and all was well. All she had to do was to turn out of the side road and she'd be on her way. Except said side road was a new build housing estate road and thus still had raised drain covers on the road. After a crunch was heard, she fessed up that something else was now not right.

Long story short, the connection of the rear anti-roll bar droplink to lower arm had been broken clean off. The lower arm is a muckle big thing hewn out of aluminium and the cost of a new replacement once again had my mate break into a cold sweat. He sourced a complete used hub assembly for £80 with lower and upper arms to use as a replacement. On my advice he also sourced a new febi balljoint, integral link, and a droplink. With the used lower arm on my bench, we set about replacing the rear balljoint.

I had previously invested in a generic bush/bearing installation and removal tool, using this with some WD40 and a loud bang that sounded like a spanner shattering, the old balljoint was loose and, on its way, out of the lower arm. We hit a snag installing the new febi balljoint with my tool, we just couldn't get it to go in square. After a bit of a think and some more hard earned being spent, he splashed out on a specific 5-Series rear balljoint tool. As soon as this arrived, I was able to quickly insert the new balljoint most of the way home. I think this tool was developed for the previous generation of 5-Series and as a result the receiving cup was not quite deep enough to push it fully home. One of my bearing cups came to the rescue and it was easily pushed home, and the supplied snap ring clipped into place with nothing more than a small screwdriver. I'll let you all know how we get on fitting the arm to the car.



The problem! As I don't own a welding set (yet) let alone having the ability to weld aluminium, a good used lower arm is the solution here.

The febi balljoint appears to be the only balljoint on the aftermarket that comes complete with the necessary snap ring. This is the connection between the hub carrier and lower arm.

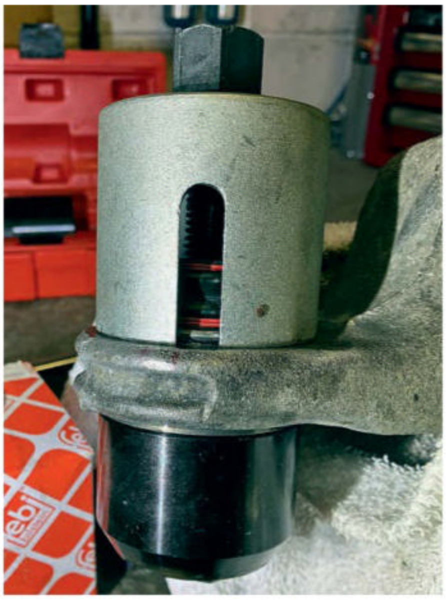
More than 22,000 OE-matching parts
partsfinder.bilsteingroup.com
BLUE PRINT

Moby Dick, the great white whale, although Rob tells me that when on the motorway, driver's get out his way sharpish as our local constabulary use these estates.

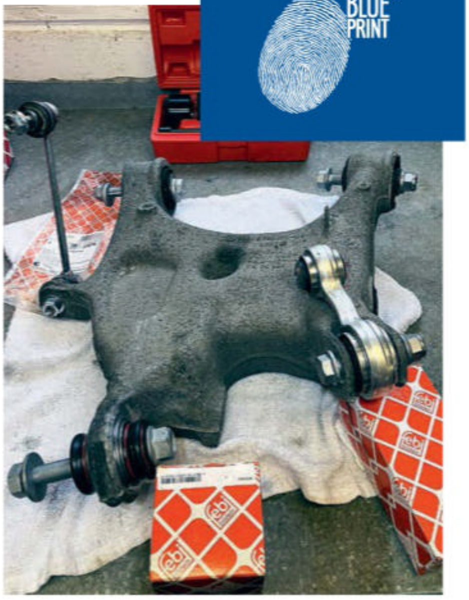
Meanwhile, an odd little job has needed doing on my 2013 BMW F10 535i. After seven years the front tyres were showing their age and a new pair was fitted by my local tyre fitter, who on seeing the wear on them, suggested that I book the car in for a full four-wheel alignment. Given that it was last done over 30,000 miles and eight years ago, I agreed to stump up. In the end the helpful tech only had to adjust the N/S/F track rod to bring the car back to factory spec. I was more surprised than pleased at that given the state of the local roads and the fact I've mostly rebuilt the front end, some of which you have read about in these pages. As it only required a front end adjustment, I was only charged for a two-wheel alignment and not four-wheel. Nice.

Sticky door handle

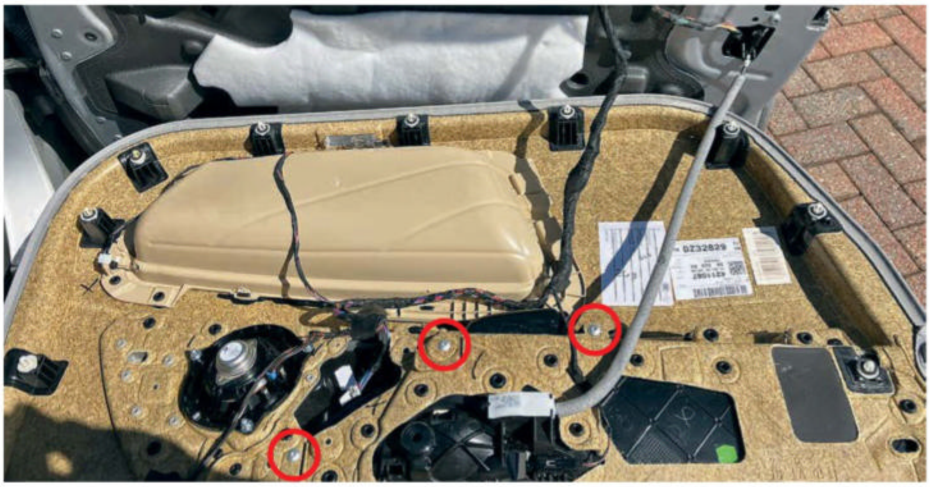
Another complaint on this model of BMW is the sticky door handle, I believe the same problem afflicts Ferrari buttons too. The soft touch coating goes sticky when it ages. A new aftermarket handle was sourced and delivered for less than £10! However, I was dreading the fitting of it which requires the door card to be removed after unclipping various bits of trim to expose the four fixing screws. I had visions of the clips snapping and generally being a pain, but I was proved wrong, and it all went back perfectly. The last job was to sort out the driver's door mirror – the glass would wobble annoyingly on bad road surfaces. A replacement heated glass was sourced from a well-known online retailer for £15 and fitting was straight forward.



A combination of my tool kits was needed to push the febi balljoint fully home. Once the right combination and size of tools were found, it went in easily.

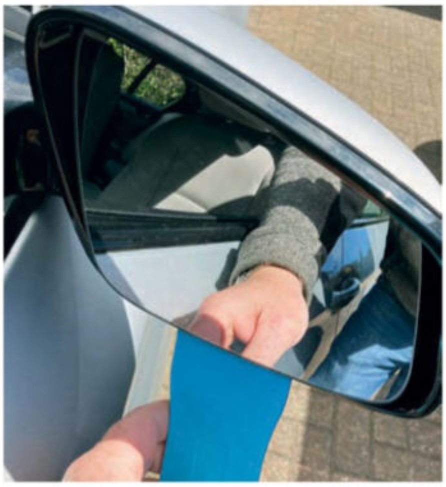


A new febi rear anti-roll bar droplink (left) and a new febi integral link (right) are ready to be fitted with a set of new bolts from my local BMW dealer.



With the door card balancing on my knee, I can identify three (circled) of the four screws holding the handle in place.

A Hunter four-wheel alignment was used to check out my 535i, the system fires laser beams at the targets fitted to the wheels to determine the alignment of each wheel.



A large flat trim tool is needed to firmly pry out the old glass. Once out, I could see that the mirror had come away from its backing plate, hence the annoying wobble.

Search more than 62,000 different articles.
partsfinder.bilsteingroup.com/register
febi bilstein BLUE PRINT

Our Cars

Jake Belder

Special Contributor

E60 MOT prep

When my 2004 BMW 530i last graced the pages of this magazine, I replaced the suspension. Since then, I have managed to do well over 20,000 miles and it has mostly just been getting on doing the stuff a big, comfortable saloon should do. But as its MOT approached, I gave it my customary once-over, and realised it would need a couple of things to pass, in addition to a service.

The first thing that came to my attention was a pile of grease on the inside of the offside rear hub. It had all the markings of a CV boot gone bad, and sure enough, that was the problem. I turned to febi to see if they could supply a boot, but their parts finder didn't list one available for the E60. So instead, they supplied a new driveshaft.

Getting the old driveshaft out proved surprisingly simple. I was worried that I would have to loosen the whole lower control/swing arm in order to get enough room to manoeuvre the driveshaft out. But the hardest part turned out to be removing the fasteners that connected the driveshaft to the differential. A combination of tight space and rust called for a lot of patience on my part, but eventually all were removed without incident. With my impact driver set to max, the axle nut spun off without a fight, and to my delight, a few taps with a rubber mallet freed up the splined shaft. From there I was able to slide the whole thing out with ease.

I rubbed some ACF50 rust prevention over the new driveshaft and put it in place. Reassembly was simple, and I shortly had the car back on the ground ready to tighten the axle nut. The torque setting for this nut is something like 400Nm, so I got out my longest breaker bar, piled all my weight and strength on it, and relied on my highly calibrated instinct to tell me when we'd reached 'good enough'.

The second thing that needed replacing was the top mounts on the front. These are a common weak point on many BMWs. Mine had started clunking a bit, and I could feel the steering was not quite as tight as before. febi supplied a new set of mounts and some new strut protectors and bump stops.

To get the strut assembly out doesn't require dismantling everything, thankfully. I loosened the two lower control arms and then marked the position of the track rods before removing them, as I would be replacing those too (the nearside had some play, thanks to a pothole earlier in the year). Then I removed the pinch bolt securing the strut in the hub. With that done, I put a jack underneath the hub and was able to remove the top mount fasteners and lower the whole assembly. I tapped a flat punch in between the pinch points to spread the part of the hub that grips the strut and pulled the strut assembly out.

It was then time for every car person's favourite near-death experience: compressing and removing the coil springs. I've never really had a problem with this, to be honest – with patience and care, a decent set of spring compressors, and appropriate precautions in place, it shouldn't have to feel like you're gambling with your life. I fit the

IN JAKE'S GARAGE

1997 VW Golf Cabriolet **My wife's dream car, currently looking like it's halfway down the assembly line as I work on an engine swap. Hopefully running by spring!**

2004 E60 BMW 530i **My daily driver. I like a big saloon, and I really like a BMW straight-six.**

CV grease slung round the rear hub from a failing boot.

New driveshaft in place with minimal fuss.

More than 48,000 different spare parts in OE matching quality

febi bilstein

New driveshaft from febi alongside the one removed from the car. The design is slightly different, but it fit perfectly.

new febi protection kit, secured the new top mounts, and re-seated the springs.

Before refitting the strut assembly into the hub, I cleaned out the bore and applied a bit of anti-seize. I set the assembly in place, securing the pinch bolt again, and then used my jack to raise the assembly and line up the top mount fasteners in the strut tower. These have a locating pin, so they only go in one way.

The final thing on the front end was the new febi track rod ends. I spun those on up to the mark I had made to ensure the tracking was roughly similar and then secured them in the hub. With the wheels back on, I lowered the car, rolled it back and forth a few times, and then managed to contort myself enough to reach the control arm fasteners and re-torque them at ride height. To cap it all off, I booked in for a four-wheel alignment.

febi new strut protection kit and top mount.

Strut assembly ready to go back into place.

New track rods from febi. These wouldn't have had to be replaced had I not hit a massive pothole earlier in the year.

Convenient engine oil filter placement on many BMWs makes changing the filter a mostly mess-free job.

New air filter from febi.

140
0
1
P
mls
11000

The service indicator is reset on the dashboard.

Service time

The last item on my MOT preparation checklist was a simple oil and filter service. I like the upper engine placement of the oil filter housing on BMWs, as it makes filter changes much simpler and less messy. After checking the filter for anything that shouldn't be there and finding nothing untoward, I installed the new one from febi, along with the new O-ring they supply for the filter housing cap.

What advantage you gain from the placement of the oil filter, however, is a trade-off for what it takes to get to the sump drain plug. The E60 has two undertrays, a small one on the front with about eight fasteners, and a much larger one that stretches halfway to the back of the car and is retained by what feels like seventy-three fasteners. The sump is, naturally, under this one. But there is a hatch from which you can access the drain plug, and lately I have been making use of this. The key to not sending oil all over the undertray (a mistake I made once) is to use some sort of funnel to direct the oil into the drain pan. I made one out of an old 5 litre jug.

The febi filter kit comes with a new crush washer for the drain plug, and with that snugged down, I filled the engine with new oil. After running it for a moment and confirming the level was right, I got in the car and reset the oil service indicator. Finally, febi supplied a new air filter, and after putting that in place, I gave everything a wipe down.

I get to wrap up with good news: the car sailed through its MOT once again. Here's to the next 20,000 miles!

Searching becomes finding!
Register for free...partsfinder.bilsteingroup.com

FREE ADS

Simply type out your details, add a contact telephone number and, for our reference only, your home address. We will even print a **PHOTOGRAPH** (subject to space). Plus whether you want the advert to run **one** or **two** issues?

WE REGRET WE CANNOT TAKE ADVERTS OVER THE PHONE.
THIS CLASSIFIED SECTION IS STRICTLY FOR CAR-RELATED ITEMS.

Car Mechanics offers a **FREE** classified service **FOR PRIVATE SELLERS ONLY** who wish to sell-on their **UNWANTED CARS** and **PARTS**, or for those who need a specific item.

SEND YOUR DETAILS VIA:

EMAIL: martyn.knowles@kelsey.co.uk

CARS FOR SALE

KIA SPORTAGE. 2013. 127,000 miles. Reluctant sale, only selling due to having Motability car now. Good points last 6 months work, new turbo, new timing chain, new brakes, new driver's side arm, maintained regularly. MOT till July 2025. Diesel. manual. Price negotiation welcome, viewings welcome. **£2200**. **07596 362140**. Lawrence Weston, Bristol.

JAGUAR X-TYPE. 2008. 135,000 miles, Body and leather interior are spotless. New tyres and battery. Detachable towbar fitted but never used. **£1275**. **07711 816025**. West Midlands.

VW GOLF AUTO MATCH. 1.9 diesel. 2007. 64,000 miles. Arctic Silver, 17 services, cambelt at 40,000, VW RDS CD, 2 remote keys, towbar, full MOT. **£2495**. **07793 057069**. South West.

VOLKSWAGEN CARAVELLE. 2001. 222,000 miles. TDI SWB. This was a project to be a campervan but unfortunately I have a foot problem and can no longer drive a manual. New engine fitted 24/7/20 with approx 30,000 miles. New springs and shocks. MOT expired. Aircon Erbacher heating. **£4500**. **07973 832367**. West Midlands.

MB CLK 500. 2004. Genuine 26000 miles with FSH. Convertible Avantgarde, Black/Black leather. Factory AMG bodykit and wheels, MOT Oct 25. **£11,250**. **07730 456480**. Greater London.

JAGUAR XF. 2009. Premium Luxury V6 D auto. 103,700 miles, Beige leather, MOT July 29th no advisories. FSH, owned last 4 years, excellent condition. **£2950**. **07714 263355**. Scotland.

VW TRANSPORTER T5. 2009. Long wheel base, twin sliding doors, 8-seats, bodywork immaculate, silver, none runner, needs new engine. 136,000 miles. **£3500**. **07756 299791**. North West.

MERCEDES-BENZ 200. 2004. 60,500 miles, CLK 200 auto Avantgarde 1.8 Kompressor engine/supercharged. Cubinite Silver, full black leather, 3 owners, full service history, electric sunroof, AMG wheels and sports suspension, MOT March 2005, excellent paintwork, low mileage as car used as a second car. This 20-year-old car has no rust and was galvanised from new. **£4250**. **07507 388003**. South West.

VOLKSWAGEN GOLF. 2010, 117,000 miles. I am selling my GT 2.0 TDI Golf – general wear and tear for the age. Has had a new EGR valve, also new cambelt and water pump. Only selling due to getting a younger car. **£2800**. **07368 909715**. South East.

PARTS FOR SALE

MGF PARTS. 2000. 304mm big brake front conversion kit RP1634. New. **£95**. **0118 972 2741**. South East.

FORD PARTS. 1980-1999. Escort, Fiesta, Puma Mk1 – starter motors, shocks, brake calipers, cambelt kits, oil filters, wiper blades. All parts new or clean condition. **£150** to clear. **07856 284613** for further info.

CLASSIFIED DEADLINE for APRIL 2025 issue: March 5th

NEW YEAR SALE

Discover your new favourite magazine in 2025!
We have something for everyone!

Subscriptions
FROM
£15

Reasons to subscribe:

• Save on the shop price • Never miss an issue • Delivered directly to you door

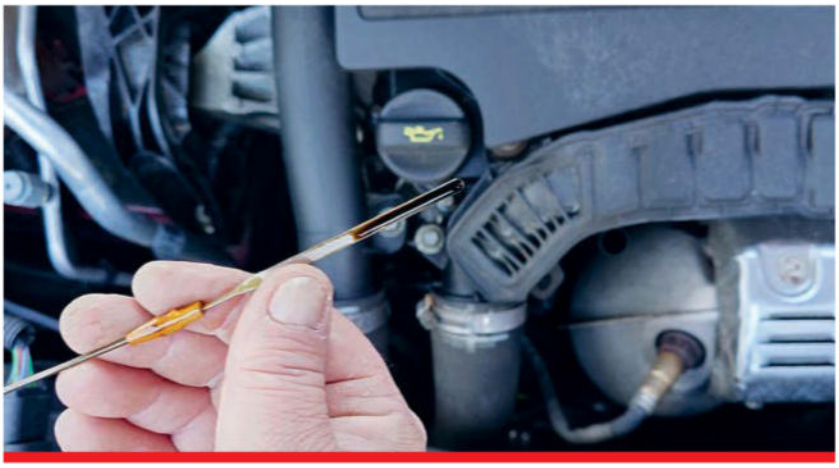
OVER 45 TITLES TO CHOOSE FROM
GO TO **SHOP.KELSEY.CO.UK/NY25**
SCAN THE **QR CODE** AND GO DIRECTLY
CALL 01959 543 747 AND QUOTE 'NY25'

Terms & Conditions: Lines are open Mon-Fri 8.30am to 5.30pm. Calls are charged at your standard network rate UK customers only. Offers end 28th February 2025

In my Humble Opinion

If only everyone did things correctly with cars – but they don't and probably never will says Mike Humble.

Don't drop a boob with your lube!



"After waiting five hours for the molasses like gloop to pour in, the car would then sound as fit as the day when it left the showroom."

As much as I truly love modern technology in a motor car, or truck for that matter, as I spend many many hours in both, sometimes I wish things could be simpler. Thankfully, we no longer have to look like a berk trying to emulate Uhura from Star Trek with a lump of plastic stuck in our lug 'oles to make a hands-free phone call, thanks to nearly all modern chariots having Bluetooth connectivity.

Cassette decks and long wave radio (ahh those happy days tuning into Atlantic 252) are both now defunct. Even finding a car with a CD player in a showroom these days is fast becoming a novelty. Who still owns a box of 8-track tapes?

Even though I'm not a Dinosaur when it comes to tech, it still gets my dander up now and again, especially when it comes to tethering your phone/device to a new car for the first time. Three things I find totally impossible to do, in no order of difficulty, are completing all sides of a Rubix cube, those 3D plastic jigsaws as seen on the Krypton Factor and getting my sodding phone to connect and work in a Honda Civic.

Running your own car for the budding DIY motorist is also a subject that has changed a great deal in the last twenty years, and its pace quickens too. They used to say in retail circles that the hardest automotive products to sell are tyres, engine oil and batteries. You could say that those aforementioned three are 'distress' purchases, in other words, bought out of sheer necessity rather than on an emotional basis. When was the last time you woke up and thought – "phwoar… I could just fit some low-profile Goodyear Super Doopers".

It doesn't seem that long ago almost every car was fitted with a Champion N9Y spark plug either – even petrol lawnmowers used them. Look at an NGK on-line catalogue, the various types and applications will make your toenails curl such is the huge spectrum of specifications for modern petrol and hybrid cars. Just trying to find the right ones for my 2020 Vauxhall Grandland was an experience, and then I gave up after finding out the replacement time is about the same length as Halley's Comet revisiting our skylines.

And then of course, there's engine oil. We've come a long way since those 'liquid engineering' times, but this topic can literally be life and death – for your engine at least. Once pretty much every petrol engine from a Cortina to a Mk2 Transit or a Dolomite to a Datsun Cherry would happily trundle away on a sump full of 15W-50 or 20W-50. Should your car require a 10W-40 grade – well, that was seen as a bit exotic back then. Should your hydraulic tappets on your Grandads Orion 1.3 CVH get a bit slappy after 60,000 miles, then all you had to do was pop down to your local motor spares shop for a tin of STP. After waiting five hours for the molasses like gloop to pour in, the car would then sound as fit as the day when it left the showroom. Even engine oil additives (something I rarely condone) these days are formulated in a myriad of different formulas. But the key thing these days is using the correct oil altogether thanks to the, some say, worrying new trend of 'wet belt' engines.

Only just the other day I was talking to a mechanic pal of mine of some 40 years on the job who was playing hell at owners of modern vehicles who still refuse to use the correct oil in their cars. He showed me a Transit van barely six years old mid-stripdown that was in for an oil pressure issue owing to the timing belt shredding up and blocking the oil pickup strainer. Eric was telling me that in seven out of ten cases he's seen, these wet belt engines are failing at low mileages because of a lack of regular servicing or more to the point correct servicing procedures. It isn't just old Eric either, my MOT guy Paul reckons the same. I've seen folk in supermarkets scanning the various engine oils on the shelves, grabbing a litre to drop in the trolley purely on the grounds that it costs £4.99 and NOT because it's the correct type for a 2023 Peugeot 3008. Once you start mixing different viscosities into a wet belt engine, you may as well be adding a handful or iron filings with it as the chemical compounds the oil supplier originally brewed for the manufacturer break down and the timing belt starts to decompose and break up.

Before Matron gives me my pills for the night, I'll share with you a quick story about engine oil. Do you remember the fuss that was caused some years ago when Mobil brought out their fully-synthetic Mobil 1 brand? Well, some years back I knew a lad who had an immaculate two- or three-year-old MG Metro Turbo, and he was properly fussy about it. The best polish, the best tyres – you name it. At the time, it cost about eighty-five million pounds for a bottle – and even then, you got four litres of it – hopeless for most cars of the time that needed between four to five for a service. Being a capable DIY type of chap, Ian bought two bottles of the stuff with a new Unipart filter thinking he'd bought the elixir of life for his engine. Well things didn't go to plan as the oil was somewhat thinner than the required 10W-40 Austin Rover decreed in the service book. His parents went spare as it leaked oil everywhere – the gear selector, the driveshaft seals – you name it. Not only that, but it was also consuming over a pint.

TOPDON®

CAR MAINTENANCE, MADE SIMPLE

Diagnostics
OBDII/EOBD
I/M
Maintenance
Battery Voltage
Update
Folder
Library
User Info
OK
ArtiDiag600 S

ARTIDIAG600 S

- Thorough Diagnostics across 4 Major Systems
- 9 Essential Maintenance Functions
- Stay Ahead with Lifetime Free Updates
- Intuitive Graphic Live Data

CONTACT US

@topdonofficial

TOPDON TECHNOLOGY Co., Ltd. I WWW.TOPDON.UK
TOPDON UK I 0118 227 0648 I Info@topdondiagnostics.co.uk
7 The Old Mill, Reading Road, Pangbourne, Reading, UK, RG8 7HY

automechanika
BIRMINGHAM

IN ASSOCIATION WITH
SMMT DRIVING THE MOTOR INDUSTRY

3-5 June 2025
NEC, Birmingham

Only
15%
of stands remaining

The event presents a unique opportunity to showcase your brand, products and services to over 15,000 automotive professionals. Attendees include garages, motor factors, bodyshops, retailers, dealerships, and detailers—all at the UK's largest automotive aftermarket trade exhibition.

Book your stand today!

Confirmed Exhibitors Include:

ALLIANCE AUTOMOTIVE GROUP
Autotech GROUP
BM CATALYSTS
BOSCH
Castrol | RACE
COMMA
DEWALT AUTO
HELLA
IAAF
IMI INSTITUTE OF THE MOTOR INDUSTRY
LIQUI MOLY
LKQ euro CAR PARTS
MANN FILTER
Shell
Snap-on